United States Department of Agriculture

Soil Conservation Service

In cooperation with South Carolina Agricultural Experiment Station and South Carolina Land Resources Conservation Commission

Soil Survey of Kershaw County Area, South Carolina

How To Use This Soil Survey

General Soil Map

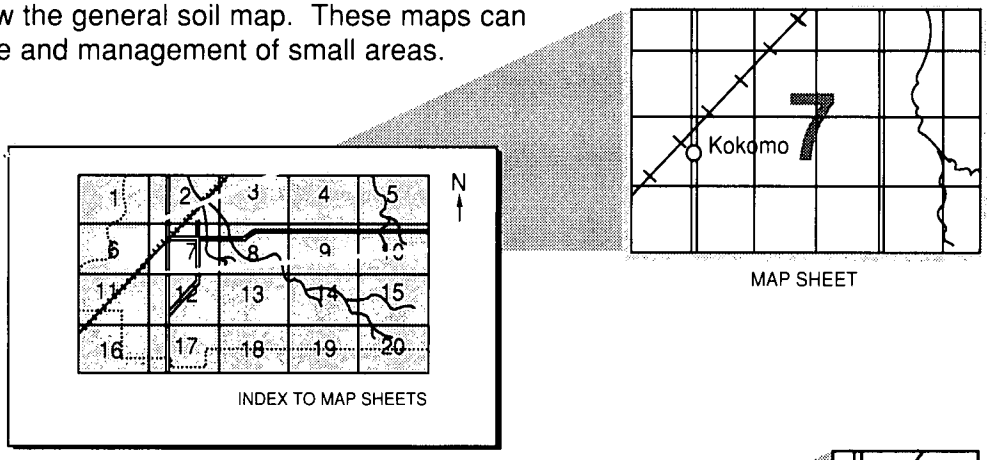
The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

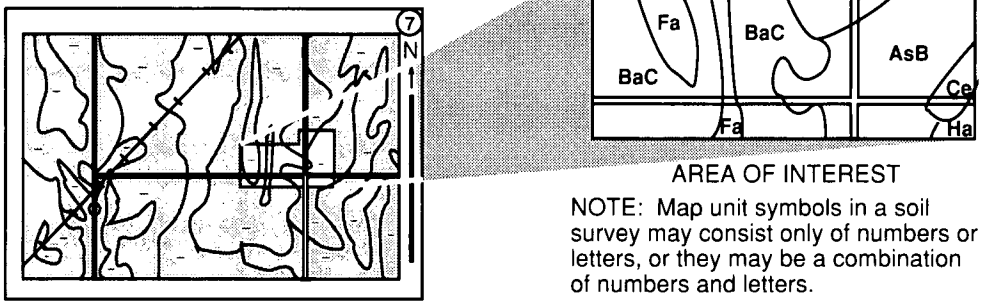
To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet, and turn to that sheet.



INDEX TO MAP SHEETS

MAP SHEET

Locate your area of interest on the map sheet. Note the map unit symbols that are in that area. Turn to the **Index to Map Units** (see Contents), which lists the map units by symbol and name and shows the page where each map unit is described.



MAP SHEET

AREA OF INTEREST

NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1984. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1985. This soil survey was made cooperatively by the Soil Conservation Service, the South Carolina Agricultural Experiment Station, and the South Carolina Land Resources Conservation Commission. It is part of the technical assistance furnished to the Kershaw and Lancaster Soil and Water Conservation Districts.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale. The soils information in this publication supersedes the information in the 1922 soils publication for Kershaw County.

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Cover: Contour stripcropping helps to control erosion on Norfolk loamy sand, 2 to 6 percent slopes. Soil erosion is a major concern on about 70 percent of the cropland and pastureland in the Kershaw County area.

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Foreword

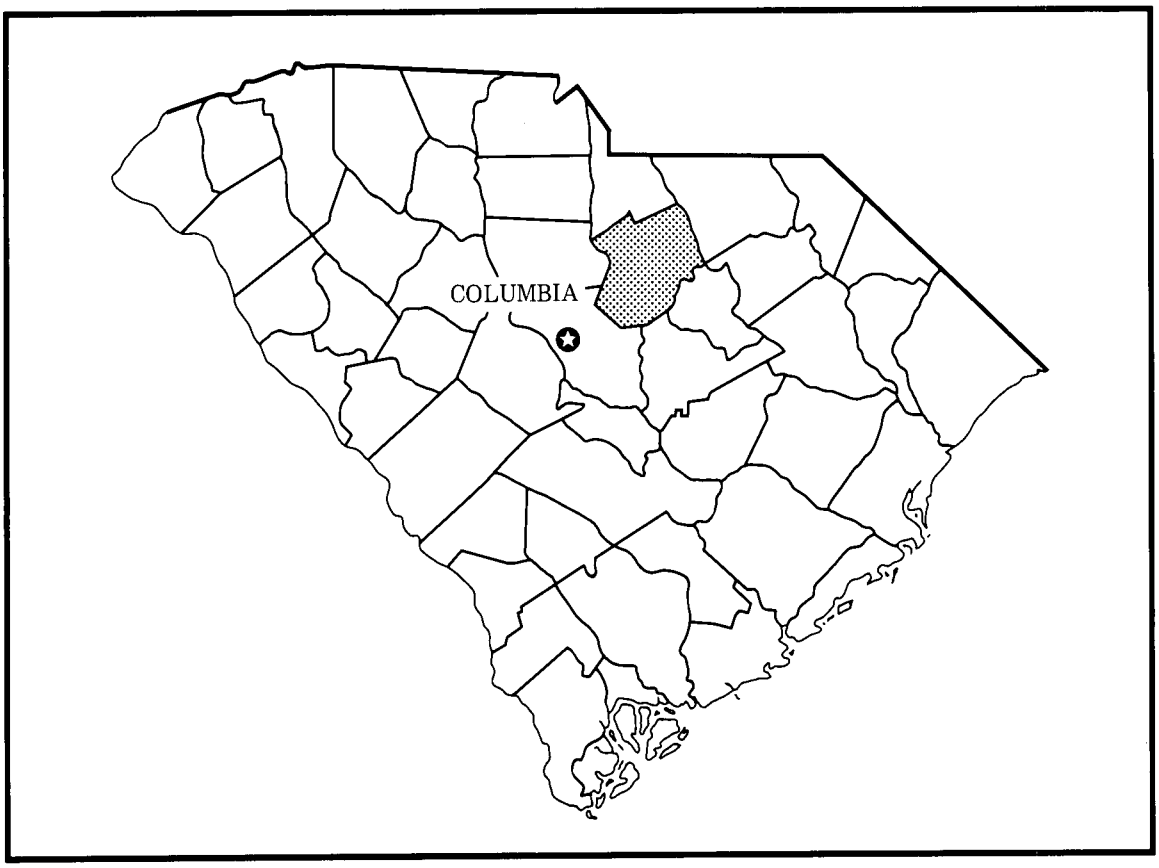
This soil survey contains information that can be used in land-planning programs in the Kershaw County area. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.

Billy R. Abercrombie
State Conservationist
Soil Conservation Service



Location of the Kershaw County Area in South Carolina.

Soil Survey of Kershaw County Area, South Carolina

By Cleveland J. Mitchell, Jr., Soil Conservation Service

Soils surveyed by Cleveland J. Mitchell, Jr., Gene Hardee, and Ed Herren, Soil Conservation Service, and Carl Lawrence, South Carolina Land Resources Conservation Commission

United States Department of Agriculture, Soil Conservation Service, in cooperation with the South Carolina Agricultural Experiment Station and the South Carolina Land Resources Conservation Commission

KERSHAW COUNTY is in the northern part of South Carolina. It has a population of about 39,000. Camden is the county seat, and, with a population of 7,400, it is the largest town in the county. The total land area of Kershaw County, excluding the area that was annexed into Lancaster County, is about 781 square miles or 473,000 acres. It is bounded on the north by Lancaster County, on the east by Chesterfield and Lee Counties, on the south by Richland and Sumter Counties, and on the west by Fairfield County.

General Nature of the Survey Area

Camden is the oldest inland town in South Carolina. In 1730, King George II ordered the establishment of 11 townships along the rivers of South Carolina. In 1733, the town of Fredericksburg was surveyed south of the present city of Camden, along the Wateree River. Scattered settlements then were started on both sides of the river, but the settlers preferred the higher ground on the northeast side. The first settlement was abandoned and the township was moved.

Irish Quakers settled along the river about 1750, but most of them left the area immediately before the Revolutionary War. In 1758, Joseph Kershaw, for whom the county is named, built a store within what is now the city limits of Camden. In 1768, the town's name was changed from Fredericksburg to Camden in honor of Lord Camden, the champion of colonial rights.

During the Revolutionary War, Lord Cornwallis led a detachment to Camden, and the city fell without resistance on June 1, 1780. For the next year Camden served as the principal supply post for all British operations in the South. Because of its strategic importance, Camden was the focal point of two major Revolutionary War engagements. The battle of Camden, in 1780, was a disaster for the American forces, but the battle of Hobkirk Hill, in 1781, was more favorable for the Americans.

Camden soon recovered from the Revolutionary War and emerged as one of the most prosperous towns in the interior of South Carolina. By 1802, the town had 200 dwellings, more than twice as many as in Columbia at that time.

During the War Between the States, Camden became an important storehouse for the Confederacy and a treatment center for hundreds of wounded soldiers. In February 1865, Camden was occupied by some of Sherman's troops, and many warehouses and stores were burned. In April 1865, Colonel Potter's troops destroyed the railroads.

Kershaw County now has many fine homes, horse operations, recreation facilities, and industries.

Climate

Prepared by the National Climatic Data Center, Asheville, North Carolina.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Camden in the period 1951 to 1978. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 42 degrees F, and the average daily minimum temperature is 30 degrees. The lowest temperature on record, which occurred at Camden on January 11, 1970, is 3 degrees. In summer the average temperature is 78 degrees, and the average daily maximum temperature is 89 degrees. The highest recorded temperature, which occurred at Camden on June 28, 1954, is 110 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (50 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

The total annual precipitation is 50 inches. Of this, 25 inches, or 50 percent, usually falls in April through September. The growing season for most crops falls within this period. In 2 years out of 10, the rainfall in April through September is less than 21 inches. The heaviest 1-day rainfall during the period of record was 4.85 inches at Camden on July 10, 1959. Thunderstorms occur on about 50 days each year, and most occur in summer.

Snowfall is rare. In 60 percent of the winters, there is no measurable snowfall. In 10 percent, the snowfall, usually of short duration, is more than 12 inches. The heaviest 1-day snowfall on record was more than 2 inches.

The average relative humidity in midafternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 90 percent. The sun shines 70 percent of the time possible in summer and 60 percent in winter. The prevailing wind is from the southwest. Average windspeed is highest, 8 miles per hour, in spring.

How This Survey Was Made

This survey was made to provide information about the soils in the survey area. The information includes a description of the soils and their location and a discussion of the suitability, limitations, and management of the soils for specified uses. Soil scientists observed the steepness, length, and shape of slopes; the general pattern of drainage; the kinds of crops and native plants growing on the soils; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material from which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils in the survey area occur in an orderly pattern that is related to the geology, the landforms, relief, climate, and the natural vegetation of the area. Each kind of soil is associated with a particular kind of landscape or with a segment of the landscape. By observing the soils in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how the soils were formed. Thus, during mapping, this model enables the soil scientist to predict with considerable accuracy the kind of soil at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, acidity, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. The system of taxonomic classification used in the United States is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the

same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area are generally collected for laboratory analyses and for engineering tests. Soil scientists interpreted the data from these analyses and tests as well as the field-observed characteristics and the soil properties in terms of expected behavior of the soils under different uses. Interpretations for all of the soils were field tested through observation of the soils in different uses under different levels of management. Some interpretations are modified to fit local conditions, and new interpretations sometimes are developed to meet local needs. Data were assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management were assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can state with a fairly high degree of probability that a given soil will have a high water table within certain depths in most years, but they cannot assure that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Map Unit Composition

A map unit delineation on a soil map represents an area dominated by one major kind of soil or an area dominated by several kinds of soil. A map unit is identified and named according to the taxonomic classification of the dominant soil or soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural objects. In common with other natural objects, they have a characteristic variability in their properties. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of soils of other taxonomic classes. Consequently, every map unit is made up of the soil or soils for which it is named and some soils that belong to other taxonomic classes. In the detailed soil map units, these latter soils are called inclusions or included soils. In the general soil map units, they are called soils of minor extent.

Most inclusions have properties and behavioral patterns similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting (similar) inclusions. They may or may not be mentioned in the map unit descriptions. Other inclusions, however, have properties and behavior divergent enough to affect use or require different management. These are contrasting (dissimilar) inclusions. They generally occupy small areas and cannot be shown separately on the soil maps because of the scale used in mapping. The inclusions of contrasting soils are mentioned in the map unit descriptions. A few inclusions may not have been observed, and consequently are not mentioned in the descriptions, especially where the soil pattern was so complex that it was impractical to make enough observations to identify all of the kinds of soils on the landscape.

The presence of inclusions in a map unit in no way diminishes the usefulness or accuracy of the soil data. The objective of soil mapping is not to delineate pure taxonomic classes of soils but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but onsite investigation is needed to plan for intensive uses in small areas.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or a building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

Soils of the Piedmont that Formed in Granite Residuum

These soils are on medium to broad ridges and side slopes adjacent to drainageways of the Piedmont. Slopes generally range from 2 to 60 percent. These soils have moderate or moderately slow permeability and a clayey or loamy subsoil.

1. Madison-Cecil-Pacolet

Moderately permeable soils that have a loamy surface layer and a clayey subsoil that can have large amounts of mica; on broad to medium ridges and side slopes

Most areas of this map unit are on ridgetops and side slopes adjacent to drainageways of the Piedmont, mainly in and around Liberty Hill in the northwest section of the survey area.

This map unit makes up about 9 percent of the survey area. It is about 70 percent Madison soils, 10 percent Cecil soils, 5 percent Pacolet soils, and 15 percent soils of minor extent.

Madison soils are on medium to broad ridgetops. Typically, the surface layer is brownish sandy loam about 3 inches thick. The subsoil from a depth of about 3 to 34 inches is mostly reddish clay. The substratum from 34 to 60 inches is reddish saprolite. Flakes of mica are throughout the pedon.

Cecil soils are on medium to broad ridgetops and side slopes. Typically, the surface and subsurface layers are brownish sandy loam about 11 inches thick. The subsoil from a depth of about 11 to 65 inches is reddish clay loam and clay.

Pacolet soils are on side slopes. Typically, the surface layer is brownish sandy clay loam about 3 inches thick. The subsoil from a depth of about 3 to 25 inches is reddish clay. The substratum is reddish clay loam and loam. It has saprolite that crushes easily.

The minor soils in this map unit include Durham, Rion, Chewacla, and Iredell soils.

Most areas of this map unit are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

The soils in this map unit are well suited to poorly suited to row crops and small grains. Erosion is a hazard, and steepness of slope is a limitation. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. All crop residue should be returned to the soil. The soils on the steeper slopes are not suited to cropland.

These soils are suited or poorly suited to pastureland. Steepness of slope is the main limitation, and erosion is a hazard. Suitable pasture plants include fescue, sericea lespedeza, and clover. Erosion can be controlled by establishing a good plant cover and maintaining it at all times. A good sod is needed if the soils on the steeper slopes are used as pastureland.

These soils are suited or poorly suited to woodland. Loblolly pine and yellow poplar are the preferred trees to plant. The erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting methods that least disturb the soil. Seedling mortality can be reduced by selecting the proper species. Competing vegetation can be controlled by

good site preparation, including spraying, cutting, and girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Track or wide-tired vehicles are needed on the steeper slopes to minimize disturbance of the soil. On some sites, trees need to be planted with a dibble. Natural regeneration is needed on some of the steeper side slopes.

These soils are suited or poorly suited to most urban uses. Slow percolation and steepness of slope are limitations affecting septic tank absorption fields. Steepness of slope is also a limitation affecting dwellings without basements and lawns and landscaping. The effects of slow percolation can be reduced by increasing the linear length of the absorption field; however, on the steeper slopes, special designs for septic systems are needed. Because of the steepness of slope, special architectural designs are needed for dwellings without basements. On less steep slopes, cutting and filling can be used to reduce the slope. Cutting and filling can also be used for lawns and landscaping.

2. Durham-Cecil-Pacolet

Moderately slowly permeable or moderately permeable soils that have a loamy surface layer and a loamy or clayey subsoil; on broad to medium ridges and side slopes

Most areas of this map unit are on ridgetops and side slopes adjacent to drainageways of the Piedmont, mainly north of Wateree Lake and south of Liberty Hill in the northwest section of the survey area.

This map unit makes up about 4 percent of the survey area. It is about 30 percent Durham soils, 25 percent Cecil soils, 10 percent Pacolet soils, and 35 percent soils of minor extent.

Durham soils are on broad to medium ridges and side slopes in the southern part of the Piedmont. Typically, the surface layer is brownish loamy sand about 7 inches thick. The subsoil from a depth of about 7 to 65 inches is mostly brownish sandy clay loam.

Cecil soils are on medium to broad ridgetops and side slopes. Typically, the surface and subsurface layers are brownish sandy loam about 11 inches thick. The subsoil from a depth of about 11 to 65 inches is reddish clay loam and clay.

Pacolet soils are on the side slopes of the Piedmont. Typically, the surface layer is brownish sandy clay loam about 3 inches thick. The subsoil from a depth of about 3 to 25 inches is reddish clay. The substratum is reddish clay loam and loam. It has saprolite that crushes easily.

The minor soils in this map unit include Helena and Nason soils.

Most areas of this map unit are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

The soils in this map unit are mostly well suited to poorly suited to row crops and small grains. Erosion is a hazard, and steepness of slope is a limitation. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. All crop residue should be returned to the soil. The soils on steep slopes are not suited to cropland.

These soils are suited or poorly suited to pastureland. Steepness of slope is the main limitation, and erosion is a hazard. Suitable pasture plants include fescue, sericea lespedeza, and clover. Erosion can be controlled by establishing a good plant cover and maintaining it at all times. A good sod is needed if the soils on steep slopes are used as pastureland.

These soils are suited or poorly suited to woodland. Loblolly pine and yellow poplar are the preferred trees to plant. The erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting methods that least disturb the soil. Seedling mortality can be reduced by planting suitable species at the proper times and by planting on beds. Competing vegetation can be controlled by good site preparation, including spraying, cutting, and girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Track or wide-tired vehicles are needed on steeper slopes to minimize disturbance of the soil. On some sites, trees need to be planted with a dibble. Natural regeneration is needed on the steeper slopes.

These soils are well suited to poorly suited to most urban uses. Slow percolation and steepness of slope are limitations affecting septic tank absorption fields. Steepness of slope is also a limitation affecting dwellings without basements and lawns and landscaping. The effects of slow percolation can be reduced by increasing the linear length of the absorption field; however, on steep slopes, special designs for septic systems are needed. Because of the steepness of slope, special architectural designs are needed for dwellings without basements. On less steep slopes, cutting and filling can be used to reduce the slope. Cutting and filling can also be used for lawns and landscaping.

Soils of the Piedmont that Formed in Carolina Slate Residuum

These soils are on broad to narrow, irregularly

shaped ridges and medium to narrow side slopes adjacent to drainageways of the Piedmont. Slopes generally range from 2 to 25 percent. These soils have moderate permeability and a clayey subsoil.

3. Nason-Georgeville-Herndon

Moderately permeable soils that have a loamy surface layer and a clayey subsoil; on broad to narrow ridges and side slopes

Most areas of this map unit are on ridgetops and side slopes adjacent to drainageways of the Piedmont, mainly northeast and southwest of Wateree Lake.

This map unit makes up about 13 percent of the survey area. It is about 15 percent Nason soils, 15 percent Georgeville soils, 13 percent Herndon soils, and 57 percent soils of minor extent.

Nason soils are on side slopes and ridges of the Piedmont. Typically, the surface layer is brownish loam about 6 inches thick. The subsoil to a depth of about 6 to 31 inches is mostly reddish and brownish silty clay. The substratum is reddish silt loam and loam.

Georgeville soils are on broad to narrow ridges in the southern part of the Piedmont. Typically, the surface layer is brownish loam about 5 inches thick. The subsoil from a depth of about 5 to 58 inches is reddish silty clay, clay, and silty clay loam. The substratum is yellowish silty clay loam.

Herndon soils are on broad ridges in the southern part of the Piedmont. Typically, the surface layer is brownish loam about 6 inches thick. The subsoil from a depth of about 6 to 46 inches is yellowish silty clay, silty clay loam, and silt loam. The substratum from 46 to 51 inches is mottled silt loam and from 51 to 60 inches is reddish partly weathered shale that crushes to silt loam.

The minor soils in this map unit include Ailey, Cecil, Greenville, and Pacolet soils.

Most areas of this map unit are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

The soils in this map unit are mostly well suited to poorly suited to row crops and small grains. Erosion is a hazard, and steepness of slope is a limitation. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. The soils on steep slopes are not suited to cropland.

These soils are well suited or suited to pastureland. Steepness of slope is a limitation, and erosion is a hazard. Suitable pasture plants include fescue, sericea lespedeza, and clover. Erosion can be controlled by establishing a good plant cover and maintaining it at all times.

These soils are suited to woodland. Loblolly pine and yellow poplar are the preferred trees to plant. The erosion hazard and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting methods that least disturb the soil. The equipment use limitation can be reduced by planting and harvesting at the proper times. Track or wide-tired vehicles are needed on steeper slopes to minimize disturbance of the soil.

These soils are suited or poorly suited to most urban uses. Slow percolation and steepness of slope are limitations affecting septic tank absorption fields. Steepness of slope is also a limitation affecting dwellings without basements and lawns and landscaping. The effects of slow percolation can be reduced by increasing the linear length of the absorption field; however, on the steeper slopes, special designs for septic systems are needed. Because of the steepness of slope, special architectural designs are needed for dwellings without basements. On less steep slopes, cutting and filling can be used to reduce the slope. Cutting and filling can also be used for lawns and landscaping.

Soils of the Coastal Plain that Formed in Loamy and Clayey Marine Sediments

These soils are mainly in the middle and upper Coastal Plain. Slopes generally range from 0 to 10 percent. These soils have slow or moderate permeability and a clayey and loamy subsoil.

4. Pelion-Goldsboro-Persanti

Moderately permeable and slowly permeable soils that have a sandy or loamy surface layer and a loamy or clayey subsoil; on smooth slopes in slight depressions or on broken side slopes

Most areas of this map unit are in the middle and upper parts of the Coastal Plain, east and southeast of Camden in and around Boykin, St. Matthews, and Antioch.

This map unit makes up about 11 percent of the survey area. It is about 50 percent Pelion soils, 15 percent Goldsboro soils, 5 percent Persanti soils, and 30 percent soils of minor extent.

Pelion soils are on smooth or broken slopes. Typically, the surface and subsurface layers are brownish loamy sand about 9 inches thick. The subsoil from a depth of about 9 to 43 inches is mostly brownish sandy loam and sandy clay loam underlain by clay. It has grayish mottles. The substratum is alternating layers of grayish sand or sandy loam and grayish kaolin clay.

Goldsboro soils are in smooth and slightly depressional areas. Typically, the surface and subsurface layers are brownish loamy sand about 12 inches thick. The subsoil from a depth of about 12 to 24 inches is brownish sandy clay loam and from 24 to 65 inches is brownish and grayish sandy clay loam.

Persanti soils are in level areas. Typically, the surface layer is brownish loam about 6 inches thick. The subsoil from a depth of about 6 to 65 inches is mottled yellowish and reddish sandy clay loam and clay loam underlain by clay. Grayish mottles are in the lower part of the subsoil.

The minor soils in this map unit include Pantego, Johnston, and Vaucluse soils.

Most areas of this map unit are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

The soils in this map unit are well suited to poorly suited to cropland. The seasonal high water table and the hazard of erosion are major concerns in management. The effects of the seasonal high water table can be reduced by surface or subsurface drainage and by land smoothing. Erosion on the steeper slopes can be controlled by contour farming, terraces, conservation tillage, cover crops, and stripcropping. Returning crop residue to the soil improves fertility, reduces crusting, and increases water infiltration into the soil.

These soils are well suited or suited to pastureland. Suitable pasture plants include bahiagrass, improved Coastal bermudagrass, and Dallisgrass. The seasonal high water table is a concern in management. The effects of the high water table can be reduced by pasture rotation, surface drainage, proper stocking, and deferment of grazing or restricted grazing during the wet seasons.

These soils are well suited or suited to woodland. Loblolly pine, longleaf pine, southern red oak, white oak, sweetgum, and yellow poplar are the preferred trees to plant. The equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times, and track or wide-tired vehicles can improve mobility. Seedling mortality can be reduced by planting suitable species at the proper times and by planting on beds. Competing vegetation can be controlled by good site preparation, including burning, spraying, cutting, and girdling.

These soils are poorly suited or suited to most urban uses. The seasonal high water table and slow percolation are limitations affecting septic tank absorption fields. Special designs for septic systems are needed. The effects of the slow percolation can be reduced by increasing the linear length of the absorption field. The high water table is also a limitation affecting dwellings without basements. Proper design of structures and special construction techniques are needed. The high water table, droughtiness, and steepness of slope are limitations affecting lawns and landscaping. The effects of the high water table can be reduced by proper drainage and by land smoothing. Droughtiness limitations can be reduced by proper selection of grasses, frequent applications of water during dry times, and more frequent applications of fertilizer. Cutting and filling or land smoothing can be used to reduce the slope.

5. Persanti-Cantey

Slowly permeable soils that have a loamy surface layer and a loamy or clayey subsoil; in low and moderately low areas

Most areas of this map unit are on old marine terraces of the Coastal Plain, mainly southwest of Camden, south of Interstate 20 between U.S. Highway 601 and the Wateree River flood plain.

This map unit makes up about 2 percent of the survey area. It is about 50 percent Persanti soils, 20 percent Cantey soils, and 30 percent soils of minor extent.

Persanti soils are in level areas in the middle and upper parts of the Coastal Plain. Typically, the surface layer is brownish sandy loam about 6 inches thick. The subsoil from a depth of about 6 to 65 inches is mottled yellowish and reddish sandy clay loam and clay loam underlain by clay. Grayish mottles are in the lower part of the subsoil.

Cantey soils are on old marine terraces. Typically, the surface layer is brownish loam about 3 inches thick. The subsoil to a depth of about 60 inches is grayish clay that has yellowish and brownish mottles.

The minor soils in this map unit include Chewacla and Congaree soils.

Most areas of this map unit are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

The soils in this map unit are well suited or suited to cropland. The seasonal high water table and the hazard of flooding are major concerns in management. The effects of the seasonal high water table can be reduced by surface or subsurface drainage and by land smoothing. Flooding can be controlled by dikes or other water-control structures. Returning crop residue to the soil improves fertility, reduces crusting, and increases water infiltration into the soil.

These soils are well suited to pastureland. Suitable pasture plants include bahiagrass and improved Coastal bermudagrass. The seasonal high water table and the hazard of flooding are concerns in management. The effects of the high water table can be reduced by pasture rotation, surface drainage, proper stocking, and deferment of grazing or restricted grazing during the wet seasons. Flooding can be controlled by dikes or other water-control structures.

These soils are well suited to woodland. Loblolly pine, sweetgum, and yellow poplar are the preferred trees to plant. The equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times, and track or wide-tired vehicles can improve mobility. Seedling mortality can be reduced by planting suitable species at the proper times and by planting on beds. Competing vegetation can be controlled by good site preparation, including burning, spraying, cutting, or girdling.

These soils are poorly suited to most urban uses. The seasonal high water table, slow percolation, and hazard of flooding are limitations affecting septic tank absorption fields. The effects of the seasonal high water table can be reduced by using special designs for septic systems, and the effects of flooding can be reduced by pumping the effluent to a more suitable site. The effects of slow percolation can be reduced by increasing the linear length of the absorption field or by using special designs for the septic system. The high water table is also a limitation affecting dwellings without basements and lawns or landscaping. Proper design of structures and drainage systems and special construction techniques are needed.

Soils of the Sand Hills that Formed in Sandy and Loamy Sediments

These soils are on broad ridgetops and side slopes of the Sand Hills and broad, irregularly shaped ridges of the Coastal Plain. Slopes generally range from 0 to 15 percent. These soils have very rapid or moderate permeability.

6. Lakeland-Blanton-Alpin

Very rapidly permeable and moderately permeable soils that are sandy throughout or that have a sandy surface layer and a sandy and loamy subsoil; on broad ridgetops and side slopes

Most areas of this map unit are on broad, irregularly shaped ridgetops and side slopes of the Sand Hills and the Coastal Plain, mainly in and around Bethune, Cassett, and Mt. Pisgah in the northeast section of the survey area and in and around Elgin in the southwest section.

This map unit makes up about 50 percent of the survey area. It is about 35 percent Lakeland soils, 15 percent Blanton soils, 5 percent Alpin soils, and 45 percent soils of minor extent.

Lakeland soils are on ridgetops and side slopes of the Sand Hills. Typically, the surface layer is grayish sand about 5 inches thick. The underlying material to a depth of about 84 inches is brownish sand.

Blanton soils are on broad ridgetops of the Coastal Plain and the Sand Hills. Typically, the surface layer is grayish sand about 4 inches thick. The subsurface layer from a depth of about 4 to 23 inches is brownish sand. The subsoil from 23 to 80 inches is yellowish and brownish sand, loamy sand, and sandy loam. Gray mottles are in the lower part of the subsoil.

Alpin soils are on broad ridgetops and narrow to medium side slopes of the Sand Hills. Typically, the surface layer is brownish sand about 5 inches thick. The subsurface layer is brownish sand from a depth of about 5 to 14 inches. The subsoil from 14 to 63 inches is yellowish sand and from 63 to 85 inches is bands of whitish sand separated by bands of brownish loamy sand.

The minor soils in this map unit include Ailey, Pelion, and Vaucluse soils.

Most areas of this map unit are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

The soils in this map unit are poorly suited to crops and small grains. Droughtiness and the low nutrient-holding capacity are major limitations. Selection of suitable crops and planting times, proper management of crop residue, and irrigation can reduce the effects of droughtiness, and conservation tillage can improve the moisture-holding capacity of the soil. The effects of the low nutrient-holding capacity can be reduced by more frequent applications of fertilizer and lime. Because soil blowing is also a concern in management, stripcropping, conservation tillage, windbreaks, and cover crops are needed, and all crop residue should be returned to the soil rather than burned.

These soils are suited to pastureland. Suitable pasture plants include bahiagrass, Coastal bermudagrass, and sericea lespedeza. The effects of the low nutrient-holding capacity can be reduced by frequent applications of fertilizer and lime. Overgrazing can be controlled by pasture rotation, proper plant selection, proper stocking, and limited grazing during dry times. Droughtiness is a concern in management.

The effects of droughtiness can be reduced by planting suitable pasture grasses at the proper times and by watering frequently during dry times.

These soils are poorly suited or well suited to woodland. Longleaf pine and loblolly pine are the preferred trees to plant. The equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times, and track or wide-tired vehicles can improve mobility. Seedling mortality can be reduced by planting suitable species at the proper times and by planting in a furrow. Competing vegetation can be controlled by good site preparation, including burning, spraying, cutting, or girdling.

These soils are suited or well suited to most urban uses. Steepness of slope is a limitation affecting septic absorption fields and dwellings without basements, and droughtiness is a limitation affecting lawns and landscaping. The low nutrient-holding capacity is also a concern. Cutting and filling or special designs for structures can reduce the limitations because of the slope. The effects of droughtiness can be reduced by planting drought-tolerant grasses and plants, by watering lawns and landscaped areas, and by mulching around shrubbery. The effects of the low nutrient-holding capacity can be reduced by frequent applications of fertilizer, lime, and water when needed during dry periods.

Soils of the Flood Plains that Formed in Alluvial Sediment

These soils are on broad flood plains and lowlands of the Piedmont and the Coastal Plain. Slopes generally range from 0 to 2 percent. These soils have moderately rapid to moderate permeability. They have a loamy or sandy subsoil.

7. Chewacla-Congaree

Moderately permeable soils that have a loamy surface layer and a loamy subsoil in underlying material; on flood plains

Most areas of this map unit are on broad flood plains in the upper part of the Coastal Plain and the Piedmont, mainly north and south of Camden along the Wateree River.

This map unit makes up about 6 percent of the survey area. It is about 60 percent Chewacla soils, 25 percent Congaree soils, and 15 percent soils of minor extent.

Typically, the Chewacla soils have a brownish loam surface layer about 8 inches thick. The subsoil from a depth of about 8 to 54 inches is brownish and grayish loam that has gray mottles. The substratum from a depth of about 54 to 70 inches is brownish sandy loam that has gray mottles.

Typically, the Congaree soils have a brownish loam surface layer about 10 inches thick. The underlying material to a depth of about 70 inches is brownish loam underlain by mottled grayish and yellowish loam.

The minor soils in this map unit include Johnston, Altavista, and Summerton soils.

Most areas of this map unit are woodland or pastureland. The rest is cropland or in miscellaneous uses.

The soils in this map unit are well suited to row crops, hay, and small grains; however, the hazard of flooding and the seasonal high water table are limitations. Flooding can be controlled by dikes or other water-control structures. Adequate outlets for drainage are not available; however, clearing the stream channels and planting at the proper times can reduce the problems caused by the high water table.

These soils are well suited to pastureland. Suitable pasture plants include tall fescue, clover, sericea lespedeza, and bahiagrass. Flooding and the seasonal high water table are concerns in management. Flooding can be controlled by dikes or other water-control structures. Adequate outlets for drainage are not available; however, clearing the stream channels can reduce the problems caused by the high water table. Pasture on these soils should not be grazed when the soil is wet.

These soils are well suited to woodland. Eastern cottonwood, loblolly pine, yellow poplar, sweetgum, and scarlet oak are the preferred trees to plant. Seedling mortality and the equipment use limitation are concerns for woodland use and management.

These soils are poorly suited to most urban uses. The hazard of flooding and the seasonal high water table are severe limitations affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. Suitable fill material, dikes, water-control structures, and special architectural designs for urban structures are needed to reduce these limitations.

8. Johnston-Pantego

Moderately rapidly permeable and moderately permeable soils that have a loamy surface layer and sandy underlying material or a loamy subsoil; on flood plains and in shallow depressions

Most areas of this map unit are on flood plains and lowlands of the Coastal Plain, mainly along the Lynches and Little Lynches Rivers in the northeast section of the survey area.

This map unit makes up about 5 percent of the survey area. It is about 50 percent Johnston soils, 30 percent Pantego soils, and 20 percent soils of minor extent.

Johnston soils are on flood plains. Typically, the surface layer is black loam about 30 inches thick. The underlying material to a depth of about 66 inches is grayish loamy sand.

Pantego soils are on flood plains and lowlands. Typically, the surface layer is black and very dark gray loam and fine sandy loam about 14 inches thick. The subsoil to a depth of about 62 inches is mostly grayish sandy clay loam.

The minor soils in this map unit include Grady, Persanti, and Rains soils.

Most areas of this map unit are in hardwoods or pasture. The rest is in crops or miscellaneous uses.

The soils in this map unit are poorly suited to row crops, small grains, and hay because of the seasonal high water table and the hazard of flooding. The effects of the seasonal high water table can be reduced by surface and subsurface drainage, by planting on beds, and by land smoothing. If proper drainage and good management practices are used, some soils in this map unit can produce high yields. Flooding generally can be controlled by dikes, levees, or other water-control structures; however, flood control is difficult because some of the soils are saturated most of the year.

These soils are poorly suited to pastureland; however, bahiagrass, clover, Dallisgrass, and fescue can be grown. The seasonal high water table and the hazard of flooding are concerns in management. Shallow surface drainage and land smoothing can reduce the effects of the seasonal high water table. Flooding generally can be controlled by dikes, levees, or other water-control structures; however, flood control is difficult because some of the soils are saturated most of the year. Pasture on these soils should not be grazed when the soil is wet.

These soils are well suited to woodland. Loblolly pine, sweetgum, sycamore, water tupelo, and water oak are the preferred trees to plant. The severe equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times, and track or wide-tired vehicles can improve mobility. Seedling mortality can be reduced by planting suitable species at the proper times and by planting on beds.

These soils are poorly suited to most urban uses. The seasonal high water table and the hazard of flooding are severe limitations affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. The effects of the seasonal high water table can be reduced by using subsurface and surface drainage and suitable fill material, and flooding generally can be controlled by dikes, levees, or other water-control structures. Because the problems caused by the seasonal high water table and flooding are extremely difficult to overcome, these soils generally should not be used for urban development.

Broad Land Use Considerations

Cropland is scattered throughout the survey area, but most of it is in general soil map units 4, 5, and 6. The soils in map units 4 and 5 generally are well suited to cropland. Steepness of slope and the hazard of erosion are concerns in some areas of these soils. The soils in map unit 6 generally are poorly suited because of droughtiness and the low nutrient-holding capacity. The soils in map unit 7 are well suited to cropland, but flooding is a hazard. The soils in map units 1, 2, and 3 range from well suited to poorly suited because of steepness of slope and the hazard of erosion. The soils in map unit 8 are poorly suited to cropland because of flooding and the high water table.

The soils in general soil map units 3, 4, 5, 6, and 7 generally are well suited or suited to pasture grasses. Most of the soils in map units 1 and 2 are suited to pasture grasses, but some are poorly suited. The soils in map unit 8 are poorly suited to pasture because of flooding and the high water table.

The soils in map units 3, 4, 5, 7, and 8 generally are well suited to woodland. Those in map unit 6 are well suited to poorly suited. The soils in map units 1 and 2 are suited to poorly suited to woodland because of the hazard of erosion and the equipment use limitation.

The soils in map unit 6 generally are well suited or suited to urban uses. Those in map unit 2 generally are well suited or suited, but some are poorly suited because of steepness of slope and the hazard of erosion. In map units 1, 3, and 4, the soils generally are suited or poorly suited to urban uses because of steepness of slope, wetness, or the hazard of erosion. The soils in map units 5, 7, and 8 generally are poorly suited to urban uses because of wetness or flooding.

Detailed Soil Map Units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and Management of the Soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the map unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Ailey sand, 0 to 6 percent slopes, is one of several phases in the Ailey series.

Some map units are made up of two or more major soils. These map units are called soil complexes.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. Toccoa-Cartecay complex is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Water is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

AeB—Ailey sand, 0 to 6 percent slopes. This well drained soil is on side slopes and toe slopes of the Coastal Plain. Slopes generally are smooth, but some are irregular in shape. Individual areas of this soil generally are about 50 acres.

Typically, this Ailey soil has a grayish sand surface layer about 9 inches thick. The subsurface layer from a depth of about 9 to 30 inches is brownish sand and loamy sand. The subsoil from 30 to 38 inches is yellowish sandy loam and from 38 to 72 inches is dense and brittle yellowish sandy clay loam and clay loam.

Included with this soil in mapping are small areas of Blanton, Wagram, Pelion, and Vaucluse soils and small areas of soils that have slopes of more than 6 percent. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: low

Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Ailey soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. Droughtiness can be reduced by proper selection of crops, conservation tillage, irrigation, and crop residue management. Frequent applications of fertilizer and lime are needed. Stripcropping, conservation tillage, windbreaks, and cover crops can reduce soil blowing, which is also a concern in management.

This soil is poorly suited to pastureland; however, bahiagrass, Coastal bermudagrass, and sericea lespedeza can be grown for forage. The low nutrient-holding capacity is a limitation, but this limitation can be reduced by frequent applications of fertilizer and lime. Pasture rotation, proper stocking, and limited grazing help to maintain the pasture in good condition.

This Ailey soil is poorly suited to woodland; however, longleaf pine can be grown. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles. Seedling mortality can be reduced by planting at proper times and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

The soil is suited to most urban uses. Slow permeability is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the total area of the absorption field. The sandy surface is a moderate limitation affecting lawns and landscaping, and droughtiness and the low nutrient-holding capacity are also limitations. The problems caused by droughtiness can be reduced by using drought-tolerant grasses and plants, irrigating, and mulching around shrubbery. Frequent applications of fertilizer and lime are needed.

AeC—Ailey sand, 6 to 10 percent slopes. This well drained soil is on side slopes of the Sand Hills. Slopes generally are smooth, but some are irregular in shape. Individual areas of this soil generally are about 35 acres.

Typically, this Ailey soil has a grayish sand surface layer about 9 inches thick. The subsurface layer from a depth of about 9 to 30 inches is brownish sand and loamy sand. The subsoil from 30 to 38 inches is yellowish sandy loam and from 38 to 72 inches is dense and brittle yellowish sandy clay loam and clay loam.

Included with this soil in mapping are small areas of Blanton, Wagram, Pelion, and Vaucluse soils. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Ailey soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. Droughtiness can be reduced by proper selection of crops, conservation tillage, irrigation, and crop residue management. Frequent applications of fertilizer and lime are needed. Stripcropping, conservation tillage, windbreaks, and cover crops can reduce soil blowing, which is also a concern in management.

This soil is poorly suited to pastureland; however, bahiagrass, Coastal bermudagrass, and sericea lespedeza can be grown for forage. The low nutrient-holding capacity and overgrazing are major concerns in management. Frequent applications of fertilizer and lime, pasture rotation, proper stocking, and limited grazing help to maintain the pasture in good condition. Grazing should be managed to protect the soil from excessive erosion.

This Ailey soil is poorly suited to woodland; however, longleaf pine can be grown. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at proper times and by using track or wide-tired vehicles. Seedling mortality can be reduced by planting at the proper times and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is suited to most urban uses. Slow permeability is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the total area of the absorption field. Because of the steepness of slope, seepage can occur

along the side slopes. Steepness of slope is a moderate limitation affecting dwellings without basements. This limitation can be reduced by cutting and filling or by using special designs for structures. The sandy surface and steepness of slope are moderate limitations affecting lawns and landscaping, and droughtiness and the low nutrient-holding capacity are major concerns. Cutting and filling can reduce the slope. The effects of droughtiness can be reduced by using drought-tolerant plants, irrigating, and mulching around shrubbery. Frequent applications of fertilizer and lime are needed.

ApB—Alpin sand, 0 to 6 percent slopes. This excessively drained soil is on broad ridgetops and accompanying side slopes of the Sand Hills. Slopes generally are smooth and convex. Individual areas of this soil are about 50 acres.

Typically, this Alpin soil has brownish sand surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 53 inches is yellowish sand and from 53 to 85 inches is 2- to 5-inch bands of mostly whitish sand separated by thin bands of brownish loamy sand.

Included with this soil in mapping are small areas of Ailey and Blanton soils and a few areas of soils that have slopes of more than 6 percent. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: very rapid
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Alpin soil are in turkey and blackjack oaks with scattered longleaf and loblolly pines. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. Droughtiness can be reduced by proper selection of crops, conservation tillage, irrigation, and crop residue management. Frequent applications of fertilizer and lime are needed. Stripcropping, conservation tillage, windbreaks, and cover crops can reduce soil blowing, which is also a concern in management.

This soil is suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass. The low nutrient-holding capacity and overgrazing are major concerns in management. Frequent applications of fertilizer and lime, pasture rotation, selection of proper plants, proper stocking, and limited grazing are needed.

This Alpin soil is suited to woodland. Loblolly pine is the preferred tree to plant. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles. Seedling mortality can be reduced by planting suitable seedlings in a furrow and at the proper times and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is well suited to most urban uses, and limitations affecting septic tank absorption fields and dwellings without basements are only slight. Droughtiness is a severe limitation affecting lawns and landscaping. This limitation can be reduced by using drought-tolerant grasses and plants, irrigating, and mulching around shrubbery. Because of the low nutrient-holding capacity, frequent applications of fertilizer and lime are needed.

ApC—Alpin sand, 6 to 10 percent slopes. This excessively drained soil is on narrow to medium side slopes of the Sand Hills. Slopes generally are smooth and convex. Individual areas of this soil are about 25 acres.

Typically, this Alpin soil has brownish sand surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 53 inches is yellowish sand and from 53 to 85 inches is 2- to 5-inch bands of mostly whitish sand separated by thin bands of brownish loamy sand.

Included with this soil in mapping are small areas of Ailey and Blanton soils and small areas of soils along narrow drainageways that are wetter than this Alpin soil. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: very rapid
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Alpin soil are in turkey and

blackjack oaks with scattered longleaf and loblolly pines. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. These limitations are difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass. The low nutrient-holding capacity and overgrazing are major concerns in management. Frequent applications of fertilizer and lime are needed. Overgrazing can be controlled by pasture rotation, proper stocking, and limited grazing.

This Alpin soil is suited to woodland. Longleaf pine is the preferred tree to plant. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles. Seedling mortality can be reduced by planting seedlings at the proper times, by planting in a furrow, and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is suited to most urban uses. Steepness of slope is a moderate limitation affecting septic tank absorption fields and dwellings without basements. This limitation can be reduced by cutting and filling to reduce the slope or by using special architectural designs for structures. Droughtiness is a severe limitation affecting lawns and landscaping. Drought-tolerant grasses and plants, irrigation, and mulching around shrubbery are needed. Because of the low nutrient-holding capacity, frequent applications of fertilizer and lime are needed.

ApD—Alpin sand, 10 to 15 percent slopes. This excessively drained soil is on side slopes along well defined drainageways of the Sand Hills. Slopes generally are smooth, but some are irregular in shape. Individual areas of this soil generally are about 20 acres.

Typically, this Alpin soil has brownish sand surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 53 inches is yellowish sand and from 53 to 85 inches is 2- to 5-inch bands of mostly whitish sand separated by thin bands of brownish loamy sand.

Included with this soil in mapping are small areas of Ailey and Blanton soils and soils along narrow drainageways that are wetter than this Alpin soil. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: very rapid
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Alpin soil are in turkey and blackjack oaks with scattered longleaf and loblolly pines. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. These limitations are difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass. The low nutrient-holding capacity and overgrazing are major concerns in management. Frequent applications of fertilizer and lime are needed. Overgrazing can be controlled by pasture rotation, proper stocking, and limited grazing.

This Alpin soil is suited to woodland. Longleaf pine is the preferred tree to plant. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track and wide-tired vehicles. Seedling mortality can be reduced by planting at the proper times, by planting in a furrow, and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is suited to most urban uses. Steepness of slope is a moderate limitation affecting septic tank absorption fields and dwellings without basements. This limitation can be reduced by cutting and filling to reduce the slope or by using special architectural designs for structures. Droughtiness is a severe limitation affecting lawns and landscaping. Drought-tolerant grasses and plants, irrigation, and mulching around shrubbery are needed. Because of the low nutrient-holding capacity, frequent applications of fertilizer and lime are needed.

AtA—Altavista loam, 0 to 2 percent slopes. This moderately well drained soil is on stream terraces of the Piedmont and on terraces of the Wateree, Little Lynches, and Lynches Rivers of the Coastal Plain. Slopes are smooth and generally concave. Individual areas of this soil generally are about 10 acres.

Typically, this Altavista soil has a brownish loam

surface layer about 6 inches thick. The subsoil from a depth of about 6 to 46 inches is mostly brownish sandy clay loam, loam, and sandy loam. Grayish mottles are in the lower part of the subsoil. The substratum is brownish loam that has grayish mottles.

Included with this soil in mapping are small areas of Chewacla, Congaree, and Wickham soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: high
Runoff: slow
Erosion potential: very low
Depth to water table: 1.5 to 2.5 feet, December to March
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Altavista soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is well suited to cropland; however, the seasonal high water table is a limitation. This limitation can be reduced by surface and subsurface drainage and by land smoothing.

This soil is well suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. The seasonal high water table is a limitation; however, this limitation can be reduced by surface drainage. Deferred grazing during wet seasons helps keep the pasture and soil in good condition.

This Altavista soil is well suited to woodland. Loblolly pine, yellow poplar, sweetgum, and sycamore are the preferred trees to plant. The moderate equipment use limitation is a concern for woodland use and management. This limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles.

This soil is poorly suited to most urban uses. The seasonal high water table is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by adding suitable fill material and by using special designs for septic systems. The seasonal high water table is also a moderate limitation affecting dwellings without basements and lawns and landscaping. This limitation can be reduced by surface or subsurface drainage, or a combination of the two systems, and by adding suitable fill material.

BaB—Blanton sand, 0 to 6 percent slopes. This somewhat excessively drained soil is on irregularly shaped ridges of the Coastal Plain. Slopes are broad, irregular in shape, and convex. Individual areas of this soil generally are about 30 acres.

Typically, this Blanton soil has a grayish sand surface layer about 4 inches thick. The subsurface layer and upper part of the subsoil from a depth of about 4 to 67 inches is mostly brownish and yellowish sand. The lower part of the subsoil from 67 to 80 inches is brownish sandy loam that has grayish mottles.

Included with this soil in mapping are areas of Ailey, Alpin, Wagram, and Lakeland soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: perched, 5 to 6 feet, December to March
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Blanton soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. Droughtiness can be reduced by proper selection of crops, crop residue management, conservation tillage, and irrigation. Frequent applications of fertilizer and lime are needed. Stripcropping, conservation tillage, windbreaks, and cover crops can reduce soil blowing, which is also a concern in management.

This soil is suited to pastureland. Suitable pasture plants include Coastal bermudagrass, bahiagrass, and sericea lespedeza. The low nutrient-holding capacity and overgrazing are concerns in management. Frequent applications of fertilizer and lime, pasture rotation, proper stocking, and limited grazing are needed.

This Blanton soil is suited to woodland. Loblolly and longleaf pines are the preferred trees to plant. The moderate seedling mortality and equipment use limitation are concerns for woodland use and management. Seedling mortality can be reduced by planting at the proper times and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles.

This soil is suited to most urban uses. Wetness is a moderate limitation affecting septic tank absorption fields, and droughtiness is a severe limitation affecting

lawns and landscaping. Drought-tolerant grasses and plants, irrigation, and mulching around shrubbery are needed.

BaC—Blanton sand, 6 to 10 percent slopes. This somewhat excessively drained soil is on irregularly shaped ridges of the Coastal Plain. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 30 acres.

Typically, this Blanton soil has a grayish sand surface layer about 4 inches thick. The subsurface layer and upper part of the subsoil from a depth of about 4 to 67 inches is mostly brownish and yellowish sand. The lower part of the subsoil from 67 to 80 inches is brownish sandy loam that has grayish mottles.

Included with this soil in mapping are a few small areas of Ailey, Alpin, Lakeland, Wagram, and Vaucluse soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: perched, 5 to 6 feet, December to March
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Blanton soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness. This limitation can be reduced by proper selection of crops, crop residue management, conservation tillage, and irrigation. Because of the low nutrient-holding capacity, frequent applications of fertilizer and lime are needed. Stripcropping, conservation tillage, windbreaks, and cover crops can reduce soil blowing, which is also a concern in management.

This soil is suited to pastureland. Suitable pasture plants include Coastal bermudagrass, bahiagrass, and sericea lespedeza. The low nutrient-holding capacity and overgrazing are concerns in management. Frequent applications of fertilizer and lime, pasture rotation, proper stocking, and limited grazing are needed.

This Blanton soil is suited to woodland. Loblolly and longleaf pines are the preferred trees to plant. The moderate seedling mortality and equipment use limitation are concerns for woodland use and management. Seedling mortality can be reduced by planting at the proper times and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles.

This soil is suited to most urban uses. Steepness of slope and wetness are moderate limitations affecting septic tank absorption fields. Steepness of slope is also a moderate limitation affecting dwellings without basements. This limitation can be reduced by cutting and filling to reduce the slope or by using special architectural designs for structures. Droughtiness and steepness of slope are severe limitations affecting lawns and landscaping. Drought-tolerant grasses and plants, irrigation, and mulching around shrubbery are needed. The slope can be reduced by land smoothing and by cutting and filling.

Ca—Cantey loam. This poorly drained soil is on old marine terraces of the Coastal Plain. Slopes are nearly level. Individual areas of this soil generally are about 75 acres.

Typically, this Cantey soil has a brownish loam surface layer about 3 inches thick. The subsoil to a depth of about 60 inches is grayish clay that has yellowish and brownish mottles.

Included with this soil in mapping are Persanti and Goldsboro soils and small areas of soils that are somewhat poorly drained. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: high
Runoff: very slow
Erosion potential: very low
Depth to water table: 0 to 1 foot, November to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: moderate

Most areas of this Caney soil are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

This soil is suited to cropland; however, the seasonal high water table is a limitation. This limitation can be reduced by surface drainage.

This soil is well suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass. The seasonal high water table is a limitation; however, this limitation can be reduced by surface drainage. Pasture rotation, proper stocking, and deferment of grazing or restricted use during wet

seasons help to maintain the pasture and soil in good condition.

This Cantey soil is well suited to woodland. Loblolly pine and sweetgum are the preferred trees to plant. The severe equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles. Seedling mortality can be reduced by planting at the proper times and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is poorly suited to most urban uses. The seasonal high water table and slow permeability are severe limitations affecting septic tank absorption fields. The hazard of flooding and the seasonal high water table are severe limitations affecting dwellings without basements, and the high water table is a severe limitation affecting lawns and landscaping. Because of the severity of these limitations and the low position of this soil on the landscape, it generally is not feasible to use this soil for urban development.

CeB—Cecil sandy loam, 2 to 6 percent slopes. This well drained soil is on medium to broad ridgetops of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 20 acres.

Typically, this Cecil soil has brownish sandy loam surface and subsurface layers about 11 inches thick. The subsoil from a depth of about 11 to 65 inches is red clay loam and clay.

Included with this soil in mapping are small areas of Durham, Georgeville, Madison, and Pacolet soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Cecil soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is well suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, sericea lespedeza, and clover. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to maintain the pasture in good condition.

This Cecil soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses; however, the clayey subsoil is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field.

CeC—Cecil sandy loam, 6 to 10 percent slopes. This well drained soil is on medium to broad ridgetops and side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 20 acres.

Typically, this Cecil soil has brownish sandy loam surface and subsurface layers about 11 inches thick. The subsoil from a depth of about 11 to 65 inches is red clay loam and clay.

Included with this soil in mapping are small areas of Madison, Georgeville, and Pacolet soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Cecil soil are woodland. The rest is in pasture, row crops, or miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to maintain the pasture in good condition. Grazing should be managed to protect the soil from excessive erosion.

This Cecil soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses. The clayey subsoil and steepness of slope are moderate limitations

affecting septic tank absorption fields. The effects of the clayey subsoil can be reduced by increasing the size of the filter field, and the effects of the slope can be reduced by using distribution boxes and a step-down design. Steepness of slope is also a moderate limitation affecting dwellings without basements. This limitation can be reduced by cutting and filling to reduce the slope, by using special architectural designs for structures, and by establishing a good sod.

Ch—Chewacla loam. This somewhat poorly drained soil is on flood plains of the Piedmont and the Coastal Plain. Slopes are nearly level. Individual areas of this soil generally are about 100 acres.

Typically, this Chewacla soil has a brownish loam surface layer about 8 inches thick. The subsoil from a depth of about 8 to 54 inches is brownish and grayish loam in the upper part and grayish loam in the lower part. The upper part of the subsoil has grayish mottles. The substratum from 54 to 70 inches is brownish sandy loam that has gray mottles.

Included with this soil in mapping are small areas of Congaree, Pantego, Toccoa, and Wehadkee soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: high
Runoff: slow
Erosion potential: very low
Depth to water table: 0.5 foot to 1.5 feet, November to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: occasional for brief periods, November to April

Most areas of this Chewacla soil are woodland. A few small areas are cropland or pastureland.

This soil is well suited to cropland; however, flooding is a hazard, and the seasonal high water table is a limitation. Flooding can be controlled by dikes or other water-control structures. The effects of the seasonal high water table are often difficult to reduce because of inadequate outlets for drainage. Planting and harvesting in dry times can help.

This soil is well suited to pastureland. Suitable pasture plants include fescue, clover, sericea lespedeza, and bahiagrass. The seasonal high water table is a limitation; however, this limitation can be reduced by surface drainage and restricted grazing during wet periods.

This Chewacla soil is well suited to woodland. Loblolly pine, yellow poplar, and sweetgum are the preferred trees to plant. The moderate equipment use limitation is a concern for woodland use and management. This limitation can be reduced by planting and harvesting at the proper times.

This soil is poorly suited to most urban uses. The hazard of flooding and the high water table are severe limitations affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. These limitations are difficult to overcome.

Co—Congaree loam. This moderately well drained soil is on broad flood plains of the Piedmont and the Coastal Plain. Slopes are nearly level. Individual areas of this soil generally are long and narrow and are about 200 acres.

Typically, this Congaree soil has a brownish loam surface layer about 10 inches thick. The underlying material to a depth of about 70 inches is brownish loam underlain by grayish loam.

Included with this soil in mapping are small areas of Norfolk, Altavista, Chewacla, and Toccoa soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: high
Runoff: slow
Erosion potential: low
Depth to water table: 2.5 to 4.0 feet, November to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: frequent, for brief periods, November to April

Most areas of this Congaree soil are cropland or pastureland. The rest is woodland or miscellaneous uses.

The soil is well suited to cropland; however, flooding is a hazard, and the seasonal high water table is a limitation. Flooding can be controlled by dikes or other water-control structures. The effects of the seasonal high water table are often difficult to reduce because of inadequate outlets for drainage. Planting and harvesting in dry times can help.

This soil is well suited to pastureland. Suitable pasture plants include fescue, clover, sericea lespedeza, and bahiagrass. Flooding and the seasonal high water table are concerns in management. Flooding can be controlled by dikes or other water-control structures. The effects of the seasonal high water table can be reduced by clearing stream channels; however,

this soil is difficult to drain because of inadequate drainage outlets. Pastures should not be grazed when the soil is wet.

This Congaree soil is well suited to woodland, and limitations affecting woodland use and management are not significant. Eastern cottonwood, loblolly pine, yellow poplar, and sweetgum are the preferred trees to plant.

This soil is poorly suited to most urban uses. The hazard of flooding and the high water table are severe limitations affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping.

Do—Dorovan muck. This very poorly drained soil is on flood plains and bays of the Sand Hills and on bottom lands of the Coastal Plain. Slopes are nearly level. Individual areas of this soil generally are about 20 acres.

Typically, this Dorovan soil has a mostly black layer of partly decomposed organic matter that is about 66 inches thick. The underlying material to a depth of 80 inches is grayish sand.

Included with this soil in mapping are small areas of Pantego, Johnston, Rains, and Grady soils. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: very high
Runoff: very slow
Erosion potential: very low
Depth to water table: +1.0 to 0.5 foot, January to December
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: frequent, for very long periods, January to December

Most areas of this Dorovan soil are in hardwoods. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland or pastureland because of the high water table, hazard of flooding, and subsidence. These limitations are difficult to reduce because of inadequate outlets for drainage.

This Dorovan soil is poorly suited to woodland; however, considering the severity of its limitations, this generally is the best use for this soil. Baldcypress can be grown. The severe equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by hand planting. Seedling mortality can be reduced by planting suitable species at the proper times and by planting on beds. Track or wide-tired vehicles are required on this soil.

This soil is poorly suited to all urban uses because of the high water table and hazard of flooding. Because these limitations are difficult to reduce, this soil generally should not be used as sites for urban development.

DuB—Durham loamy sand, 2 to 6 percent slopes. This well drained soil is on medium to broad ridgetops and side slopes of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 20 acres.

Typically, this Durham soil has a brownish loamy sand surface layer about 7 inches thick. The subsoil from a depth of about 7 to 65 inches is mostly brownish sandy clay loam.

Included with this soil in mapping are some small areas of Cecil, Wagram, Helena, and Madison soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderately slow
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this soil are cropland or pastureland. The rest is woodland or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, bahiagrass, sericea lespedeza, and clover. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Durham soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is well suited to most urban uses; however, slow percolation is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by enlarging the absorption field.

DuC—Durham loamy sand, 6 to 10 percent slopes. This well drained soil is on medium ridgetops and side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 15 acres.

Typically, this Durham soil has a brownish loamy sand surface layer about 7 inches thick. The subsoil from a depth of about 7 to 65 inches is mostly brownish sandy clay loam.

Included with this soil in mapping are some small areas of Cecil, Ailey, Madison, and Pacolet soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderately slow
Available water capacity: moderate
Runoff: medium
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Durham soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, bahiagrass, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Durham soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses. Slow percolation is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by enlarging the absorption field. Steepness of slope is a moderate limitation affecting dwellings without basements and lawns and landscaping. This limitation can be reduced by cutting and filling to reduce slope or by using special architectural designs for structures.

FaA—Faceville loamy sand, 0 to 2 percent slopes. This well drained soil is on broad interstream divides of the Coastal Plain. Slopes are smooth and convex. Individual areas of this soil generally are about 20 acres.

Typically, this Faceville soil has a brownish loamy sand surface layer about 7 inches thick. The subsoil from a depth of about 7 to 65 inches is mostly reddish sandy clay.

Included with this soil in mapping are small areas of Norfolk and Goldsboro soils. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Faceville soil are cropland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is well suited to cropland. There are no major limitations for this use.

This soil is well suited to pastureland. Suitable pasture plants include bahiagrass, Coastal bermudagrass, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Faceville soil is suited to woodland, and limitations affecting woodland use or management are not significant. Loblolly and longleaf pines are the preferred trees to plant.

This soil is well suited to most urban uses (fig. 1). Limitations affecting septic tank absorption fields, dwellings without basements, or lawns and landscaping are not significant.

FaB—Faceville loamy sand, 2 to 6 percent slopes. This well drained soil is on broad ridges and side slopes of interstream divides of the Coastal Plain. Slopes are smooth and convex. Individual areas of this soil generally are about 25 acres.

Typically, this Faceville soil has a brownish loamy sand surface layer about 7 inches thick. The subsoil from a depth of about 7 to 65 inches is mostly reddish sandy clay.

Included with this soil in mapping are small areas of Norfolk, Goldsboro, and Lugoff soils. The included soils make up about 10 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium

Figure 1.—This major industry in Kershaw County is in an area of Faceville loamy sand, 0 to 2 percent slopes. This soil is well suited to urban uses.

Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Faceville soil are cropland. The rest is pastureland, woodland, or in miscellaneous uses.

This soil is well suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is well suited to pastureland. Suitable pasture plants include bahiagrass, Coastal bermudagrass, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Faceville soil is suited to woodland, and limitations affecting woodland use or management are not significant. Loblolly and longleaf pines are the preferred trees to plant.

This soil is well suited to most urban uses. Limitations affecting septic tank absorption fields, dwellings without basements, or lawns and landscaping are not significant.

GeB—Georgeville loam, 2 to 6 percent slopes. This well drained soil is on ridges adjacent to drainageways in the southern part of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 50 acres.

Typically, this Georgeville soil has a brownish loam surface layer about 5 inches thick. The subsoil from 5 to 58 inches is reddish clay, silty clay, and silty clay loam. The substratum to a depth of about 70 inches is yellowish silty clay loam.

Included with this soil in mapping are a few small areas of Cecil, Herndon, and Nason soils and small areas of eroded soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate

Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Georgeville soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include tall fescue, clover, and sericea lespedeza. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Georgeville soil is suited to woodland, and limitations affecting woodland use or management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses; however, slow permeability is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field or by placing the filter line in more permeable material. This soil should be tested for dispersement before it is used for urban purposes.

GeC—Georgeville loam, 6 to 10 percent slopes. This well drained soil is on narrow ridgetops and side slopes adjacent to drainageways in the southern part of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 30 acres.

Typically, this Georgeville soil has a brownish loam surface layer about 5 inches thick. The subsoil from a depth of about 5 to 58 inches is reddish clay, silty clay, and silty clay loam. The substratum to a depth of about 70 inches is yellowish silty clay loam.

Included with this soil in mapping are a few small areas of Herndon and Nason soils and small areas of eroded soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Georgeville soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Georgeville soil is suited to woodland, and limitations affecting woodland use or management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses. Slow permeability and steepness of slope are moderate limitations affecting septic tank absorption fields. The effects of the slow permeability can be reduced by increasing the size of the absorption field or by placing the filter line in more permeable material. Cutting and filling can reduce slope, or a step-down design can be used. Steepness of slope is a moderate limitation affecting dwellings without basements and lawns and landscaping. For dwellings, this limitation can be reduced by cutting and filling to reduce slope or by using special architectural designs for structures. For lawns and landscaping, land smoothing, cutting and filling to reduce the slope, and establishing a good sod can help. This soil should be tested for dispersement before it is used for urban purposes.

GoA—Goldsboro loamy sand, 0 to 2 percent slopes. This moderately well drained soil is in smooth and slightly depressional areas of the Coastal Plain. Individual areas of this soil generally are about 30 acres.

Typically, this Goldsboro soil has mostly brownish loamy sand surface and subsurface layers about 12 inches thick. The subsoil from a depth of about 12 to 24 inches is brownish sandy clay loam and from 24 to 65 inches is brownish and grayish sandy clay loam.

Included with this soil in mapping are small areas of Grady, Rains, Persanti, and Norfolk soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: slow
Erosion potential: very low

Depth to water table: 2 to 3 feet, December to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Goldsboro soil is cropland or pastureland. The rest is woodland or in miscellaneous uses.

This soil is suited to cropland; however, the seasonal high water table is a minor limitation. This limitation can be reduced by surface or subsurface drainage.

This soil is suited to pastureland. Suitable pasture plants include bahiagrass, Coastal bermudagrass, and Dallisgrass. The seasonal high water table is a minor limitation. This limitation can be reduced by deferring grazing when this soil is wet and by using surface drainage.

This Goldsboro soil is well suited to woodland. Loblolly pine, longleaf pine, southern red oak, and white oak are the preferred trees to plant. The moderate equipment use limitation is a concern for woodland use and management. This limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles.

This soil is suited to most urban uses; however, the seasonal high water table is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by using suitable fill material or special designs for septic systems. Wetness is a moderate limitation affecting dwellings without basements. This limitation can be reduced by surface drainage and land shaping.

Gr—Grady loam. This poorly drained soil is in nearly level to slightly depressional areas of the Coastal Plain. Individual areas of this soil generally are about 75 acres.

Typically, this Grady soil has a grayish loam surface layer about 3 inches thick. The subsoil to a depth of about 60 inches is mostly grayish clay and clay loam with yellowish mottles.

Included with this soil in mapping are small areas of Rains, Persanti, and Johnston soils. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: slow
Erosion potential: low
Depth to water table: 0 to 1 foot, December to January
Depth to bedrock: more than 5 feet
Shrink-swell potential: moderate

Most areas of this Grady soil are woodland or pastureland. The rest is cropland or in miscellaneous uses.

This soil is poorly suited to cropland. The seasonal high water table is a major limitation. This limitation can be reduced by surface drainage.

This soil is suited to pastureland. Bahiagrass is the main forage grown. The seasonal high water table is a limitation, but this limitation can be reduced by surface drainage. Pasture rotation, proper stocking, and deferment of grazing or restricted use during wet seasons help maintain the pasture and soil in good condition.

This Grady soil is well suited to woodland. Loblolly pine, American sycamore, and water tupelo are the preferred trees to plant. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles. The seedling mortality limitation can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is poorly suited to urban uses because of wetness and slow permeability. Because these limitations are difficult to reduce, this soil is not recommended for urban development.

GvB—Greenville sandy loam, 2 to 6 percent slopes. This well drained soil is on medium and broad ridgetops of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 25 acres.

Typically, this Greenville soil has a brownish sandy loam surface layer about 5 inches thick. The subsoil from a depth of about 5 to 65 inches is mostly dark red clay.

Included with this soil in mapping are small areas of Nason, Cecil, Georgeville, and Lugoff soils. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Greenville soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is well suited to pastureland. Suitable pasture plants include fescue, clover, sericea lespedeza, and bahiagrass. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Greenville soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses; however, the clayey subsoil is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field.

GvC—Greenville sandy loam, 6 to 10 percent slopes. This well drained soil is on narrow ridgetops and side slopes of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 20 acres.

Typically, this Greenville soil has a brownish sandy loam surface layer about 5 inches thick. The subsoil from a depth of about 5 to 65 inches is mostly dark red clay.

Included with this soil in mapping are small areas of Georgeville, Nason, and Lugoff soils. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: moderate
Runoff: medium
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Greenville soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is well suited to pastureland. Suitable pasture plants include fescue, clover, sericea lespedeza, and bahiagrass. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Greenville soil is suited to woodland, and limitations affecting woodland use and management are not significant. Longleaf pine, loblolly pine, and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses. The slow permeability and steepness of slope are moderate limitations affecting septic tank absorption fields. The effects of slow permeability can be reduced by increasing the size of the absorption field. Cutting and filling can reduce the slope, or special designs for septic systems can be used. Steepness of slope is a moderate limitation affecting dwellings without basements and lawns and landscaping. This limitation can be reduced by cutting and filling to reduce the slope or by using special architectural designs for structures.

HeB—Helena sandy loam, 2 to 6 percent slopes. This moderately well drained soil is on toe slopes of the Piedmont. Slopes are smooth and concave. Individual areas of this soil generally are about 10 acres.

Typically, this Helena soil has brownish sandy loam surface and subsurface layers about 7 inches thick. The subsoil from a depth of about 7 to 19 inches is mostly yellowish clay and sandy clay loam and from 19 to 46 inches is grayish clay. The substratum to a depth of about 65 inches is grayish sandy clay loam.

Included with this soil in mapping are small areas of Durham, Madison, and Toccoa soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: perched, 1.5 to 2.5 feet, January to April
Depth to bedrock: 48 to 60 inches to soft bedrock
Shrink-swell potential: high

Most areas of this Helena soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard, and the seasonal high water table is a limitation. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. Surface drainage can intercept water seeping down the slope.

This soil is suited to pastureland. Suitable pasture plants include fescue, sericea lespedeza, clover, and

bahiagrass. The seasonal high water table is a limitation; however, this limitation can be reduced by surface drainage. Overgrazing is also a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Helena soil is suited to woodland. Loblolly pine and yellow poplar are the preferred trees to plant. The moderate equipment use limitation is a concern for woodland use and management. This limitation can be reduced by planting and harvesting at the proper times.

This soil is poorly suited to most urban uses. Slow permeability and the seasonal high water table are severe limitations affecting septic tank absorption fields. The effects of the seasonal high water table can be reduced by adding suitable fill material, and the effects of slow permeability can be reduced by increasing the size of the absorption field. Shrinking and swelling of the soil is a severe limitation affecting dwellings without basements. The effects of shrinking and swelling and low strength can be reduced by using special reinforced foundations or by removing unsuitable soil material and filling with suitable material. Shrinking and swelling can also be kept to a minimum if the soil is kept moist during dry periods. The seasonal high water table is a moderate limitation for lawns and landscaping. This limitation can be reduced by surface drainage.

HrB—Herndon loam, 2 to 6 percent slopes. This well drained soil is on broad, irregularly shaped ridges in the southern part of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 25 acres.

Typically, this Herndon soil has a brownish loam surface layer about 6 inches thick. The subsoil from a depth of about 6 to 46 inches is mostly yellowish silty clay and silty clay loam. The substratum from 46 to 51 inches is mottled yellowish, reddish, and grayish silt loam and from 51 to 60 inches is reddish partly weathered shale that crushes to silt.

Included with this soil in mapping are a few small areas of Durham, Cecil, Nason, and Georgeville soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Herndon soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is well suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Herndon soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses; however, the clayey subsoil is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field or by placing the filter line in more permeable material. This soil should be tested for dispersement before it is used for any urban purpose.

HrC—Herndon loam, 6 to 10 percent slopes. This well drained soil is on broad ridges in the southern part of the Piedmont uplands. Slopes are irregular in shape and convex. Individual areas of this soil are about 20 acres.

Typically, this Herndon soil has a brownish loam surface layer about 6 inches thick. The subsoil from a depth of about 6 to 46 inches is mostly yellowish silty clay and silty clay loam. The substratum from 46 to 51 inches is mottled yellowish, reddish, and grayish silt loam and from 51 to 60 inches is reddish partly weathered shale that crushes to silt.

Included with this soil in mapping are a few small areas of Durham, Cecil, Georgeville, and Nason soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Herndon soil are cropland or pastureland. The rest is woodland.

This soil is suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage,

cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Herndon soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is suited to urban uses. The clayey subsoil and steepness of slope are moderate limitations affecting septic tank absorption fields. These limitations can be reduced by increasing the size of the absorption field or placing the filter line in more permeable material and by cutting and filling to reduce the slope or using special designs for septic systems. Steepness of slope is also a moderate limitation affecting dwellings without basements and lawns and landscaping. This limitation can be reduced by land smoothing, cutting and filling, and establishing a good sod. This soil should be tested for dispersement before it is used for any urban purpose.

IeB—Iredell loam, 1 to 6 percent slopes. This moderately well drained soil is on medium ridgetops of the Piedmont. Slopes are smooth and slightly convex. Most of the acreage of this soil is in one long, narrow delineation near Liberty Hill.

Typically, this Iredell soil has a brownish loam surface layer about 6 inches thick. The subsoil from a depth of about 6 to 29 inches is mostly brownish clay underlain by sandy clay loam. It has mottles in the lower part. The substratum to a depth of about 45 inches is mottled sandy loam and weathered bedrock that crushes to sandy loam.

Included with this soil in mapping are small areas of Winnsboro and Poindexter soils. These included soils make up about 10 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: perched, 1 to 2 feet, December to April
Depth to bedrock: more than 40 inches to soft bedrock
Shrink-swell potential: very high

Most areas of this Iredell soil are woodland. The rest is in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard, and the seasonal high water table is a limitation. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. The effects of the seasonal high water table can be reduced by surface drainage and by selecting suitable crops.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Iredell soil is poorly suited to woodland; however, loblolly pine and eastern redcedar can be grown. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times. Seedling mortality can be reduced by planting at the proper times and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is poorly suited to most urban uses. The seasonal high water table and slow permeability are severe limitations affecting septic tank absorption fields. The effects of the seasonal high water table can be reduced by land smoothing and, in some cases, by surface drainage, which cuts off water seeping downhill. The limitation of slow permeability can be reduced by increasing the size of the absorption field or, in some cases, by placing the filter line in more permeable material. The seasonal high water table and shrinking and swelling are severe limitations affecting dwellings without basements, and wetness is a moderate limitation affecting lawns and landscaping. The effects of the seasonal high water table can be reduced by land smoothing and by establishing a good sod. The limitation of shrinking and swelling can be reduced by using special reinforced foundations, by removing unsuitable soil material and filling with suitable material, and by keeping the soil moist during dry periods.

Jo—Johnston loam. This very poorly drained soil is on flood plains of the Coastal Plain. The areas of this soil generally are long and narrow and continuous along the streams. Slopes are nearly level. Individual areas of this soil generally are about 50 acres.

Typically, this Johnston soil has a black loam surface layer about 30 inches thick. The underlying material to a depth of about 66 inches is grayish loamy sand.

Included with this soil in mapping are small areas of Dorovan, Grady, Rains, and Pantego soils. The

included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderately rapid
Available water capacity: low
Runoff: slow to ponded
Erosion potential: very low
Depth to water table: +1.0 to 1.5 feet, November to June
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: frequent, brief to long periods, November to July

Nearly all of the acreage of this Johnston soil is in hardwoods. The rest is in miscellaneous uses.

This soil is poorly suited to cropland and pastureland because of flooding and the seasonal high water table. This soil is saturated most of the year, and drainage and flood control measures are difficult to establish because of inadequate drainage outlets.

This Johnston soil is well suited to water-tolerant hardwoods, such as baldcypress, sweetgum, and water oak. The severe equipment use limitation and seedling mortality are concerns for woodland use and management. These limitations can be reduced by planting and harvesting at the proper times, by planting on beds, and by using track or wide-tired vehicles.

This soil is poorly suited to most urban uses because of the seasonal high water table, sandy texture, and hazard of flooding. Because these limitations are difficult to reduce, this soil should not be used for urban development.

LaB—Lakeland sand, 0 to 6 percent slopes. This excessively drained soil is on ridgetops of the Sand Hills. Slopes are smooth and convex. Individual areas of this soil generally are about 200 acres.

Typically, this Lakeland soil has a grayish sand surface layer about 5 inches thick. The underlying material from a depth of about 5 to 84 inches is brownish sand.

Included with this soil in mapping are small areas of Ailey, Blanton, and Wagram soils, and small areas of more poorly drained soils. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: very rapid
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Lakeland soil are in a scrubby growth of turkey and blackjack oaks with a few scattered longleaf pines (fig. 2). The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. Droughtiness can be reduced by proper selection of crops, irrigation, crop residue management, and conservation tillage. Frequent applications of fertilizer and lime are needed. Stripcropping, conservation tillage, windbreaks, and cover crops can reduce soil blowing, which is also a concern in management.

This soil is suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass. The low nutrient-holding capacity is a limitation, and overgrazing is a major concern in management. The effects of the low nutrient-holding capacity can be reduced by frequent applications of fertilizer and lime. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Lakeland soil is poorly suited to woodland; however, longleaf pine can be grown. The moderate seedling mortality and equipment use limitation are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using wide-tired or track vehicles. Seedling mortality can be reduced by planting at the proper times, by planting in a furrow, and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is suited to most urban uses; however, droughtiness and the sandy texture are moderate limitations affecting lawns and landscaping. These limitations can be reduced by using drought-tolerant grasses and plants, irrigating, and mulching around shrubbery.

LaC—Lakeland sand, 6 to 10 percent slopes. This excessively drained soil is on ridgetops of the Sand Hills. Slopes are smooth and convex. Individual areas of this soil generally are about 75 acres.

Typically, this Lakeland soil has a grayish sand surface layer about 5 inches thick. The underlying material from a depth of about 5 to 84 inches is brownish sand.

Included with this soil in mapping are small areas of Ailey, Blanton, and Wagram soils, and small areas of soils that are wetter than the Lakeland soil. The

Figure 2.—Longleaf pine and turkey oak can grow on Lakeland sand, 0 to 6 percent slopes.

included soils make up about 10 percent of this map unit.

Important Soil Properties

Permeability: very rapid
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Lakeland soil are in a scrubby growth of turkey and blackjack oaks with a few scattered loblolly pines. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the low nutrient-holding capacity. These limitations are difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass.

The low nutrient-holding capacity is a limitation, and overgrazing is a major concern in management. The effects of the low nutrient-holding capacity can be reduced by more frequent applications of fertilizer and lime. Overgrazing can be controlled by pasture rotation, proper stocking, and limited grazing.

This Lakeland soil is poorly suited to woodland; however, longleaf pine can be grown. The moderate seedling mortality and equipment use limitation are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using wide-tired or track vehicles. Seedling mortality can be reduced by planting at the proper times, by planting in a furrow, and by controlling competing vegetation by good site preparation, including burning, cutting, spraying, or girdling.

This soil is suited to most urban uses; however, steepness of slope is a moderate limitation affecting septic tank absorption fields and dwellings without basements, and droughtiness, the sandy texture, and steepness of slope are moderate limitations affecting lawns and landscaping. These limitations can be reduced by using drought-tolerant grasses and plants, irrigating, mulching around shrubbery, land smoothing, cutting and filling, and by establishing and maintaining a good sod.

LaD—Lakeland sand, 10 to 15 percent slopes. This excessively drained soil is on side slopes along well defined drainageways of the Sand Hills. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 25 acres.

Typically, this Lakeland soil has a grayish sand surface layer about 5 inches thick. The underlying material from a depth of about 5 to 84 inches is brownish sand.

Included with this soil in mapping are small areas of Ailey, Vaucluse, Blanton, and Wagram soils. The included soils make up about 10 percent of this map unit.

Important Soil Properties

Permeability: very rapid
Available water capacity: low
Runoff: slow to medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Lakeland soil are in scrubby growth of turkey and blackjack oaks with a few scattered longleaf pines. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness, the low nutrient-holding capacity, and the hazard of erosion. These limitations are difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass. The low nutrient-holding capacity is a limitation, and overgrazing is a concern in management. The effects of the low nutrient-holding capacity can be reduced by frequent applications of fertilizer and lime. Overgrazing can be controlled by pasture rotation, proper stocking, and limited grazing.

This Lakeland soil is poorly suited to woodland; however, longleaf pine can be grown. The moderate seedling mortality and equipment use limitation are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles. Seedling mortality can be reduced by planting at the the proper times, by planting in a furrow, and by controlling competing vegetation by good site preparation, including cutting, burning, spraying, or girdling.

This soil is suited to most urban uses. Steepness of slope is a moderate limitation affecting septic tank absorption fields and dwellings without basements. Absorption field lines should be placed across the slope, or step-down boxes should be used. Droughtiness, the sandy texture, and steepness of slope are moderate limitations affecting lawns and landscaping. These limitations can be reduced by using drought-tolerant grasses and plants, irrigating, mulching around shrubbery, land smoothing, cutting and filling, and by establishing and maintaining a good sod.

LuB—Lugoff gravelly loamy sand, 2 to 6 percent slopes. This well drained soil is on medium to broad interstream divides of the Coastal Plain. Slopes are smooth and convex. Individual areas of this soil generally are about 20 acres.

Typically, this Lugoff soil has a grayish gravelly loamy sand surface layer about 8 inches thick. The subsurface layer from a depth of about 8 to 14 inches is brownish gravelly sandy loam. The subsoil from 14 to 34 inches is yellowish gravelly clay and from 34 to 65 inches is brownish clay.

Included with this soil in mapping are some small areas of Georgeville, Norfolk, Faceville, and Summerton soils and small areas of soils that have a surface layer that is more than 20 inches thick. The included soils

make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Lugoff soil are cropland. The rest is pastureland, woodland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard, and pebbles and stones in the surface layer are a limitation. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. The pebbles and stones in the surface layer make this soil difficult to cultivate. Conservation tillage can reduce the severity of this limitation.

This soil is well suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Because the pebbles and stones on the surface are a hazard to mowing, grasses that can be cut high enough to avoid the pebbles and stones are needed.

This Lugoff soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine is the preferred tree to plant.

This soil is suited to most urban uses, and limitations affecting septic tank absorption fields or dwellings without basements are not significant. Small stones are a severe limitation affecting lawns and landscaping. This limitation can be reduced by planting grasses that can be cut high enough to avoid the pebbles and stones.

LuC—Lugoff gravelly loamy sand, 6 to 10 percent slopes. This well drained soil is on side slopes of medium and broad interstream divides of the Coastal Plain. Slopes are smooth and convex. Individual areas of this soil generally are about 15 acres.

Typically, this Lugoff soil has a grayish gravelly loamy sand surface layer about 8 inches thick. The subsurface layer from a depth of about 8 to 14 inches is brownish gravelly sandy loam. The subsoil from 14 to 34 inches is yellowish gravelly clay and from 34 to 65 inches is mostly brownish clay.

Included with this soil in mapping are some small areas of Georgeville, Nason, and Vaucluse soils and small areas of soils that have a surface layer that is more than 20 inches thick. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Lugoff soil are cropland. The rest is pastureland, woodland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a hazard, and pebbles and stones in the surface layer are a limitation. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. The pebbles and stones in the surface layer make cultivation difficult. Conservation tillage can reduce the severity of this limitation.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Because the pebbles and stones on the surface are a hazard to mowing, grasses that can be cut high enough to avoid the pebbles and stones are needed. Overgrazing is a concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Lugoff soil is suited to woodland, and limitations affecting woodland use or management are not significant. Loblolly pine is the preferred tree to plant.

This soil is suited to most urban uses. Steepness of slope is a moderate limitation affecting septic tank absorption fields and dwellings without basements. This limitation can be reduced by using a step-down design for septic systems and special architectural designs for buildings or by cutting and filling to reduce the slope. Small stones and steepness of slope are severe limitations affecting lawns and landscaping. Grasses that can be cut high enough to avoid the pebbles and stones are needed. The slope can be reduced by land smoothing or by cutting and filling, or the effects of the slope can be reduced by establishing a good sod.

LuD—Lugoff gravelly loamy sand, 10 to 15 percent slopes. This well drained soil is on side slopes of the Coastal Plain. Slopes are irregular in shape. Individual areas of this soil generally are about 10 acres.

Typically, this Lugoff soil has a grayish gravelly loamy sand surface layer about 8 inches thick. The

subsurface layer from a depth of about 8 to 14 inches is brownish gravelly sandy loam. The subsoil from 14 to 34 inches is yellowish gravelly clay and from 34 to 65 inches is mostly brownish clay.

Included with this soil in mapping are some small areas of Pelion and Vaucluse soils and small areas of soils that have slopes of less than 10 percent or more than 15 percent. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Lugoff soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of the hazard of erosion and the pebbles and stones on the surface. These limitations are difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Because the pebbles and stones on the surface are a hazard to mowing, grasses that can be cut high enough to avoid the pebbles and stones are needed. Overgrazing is also a concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Lugoff soil is suited to woodland. Loblolly pine is the preferred tree to plant. The severe hazard of erosion and moderate equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. The equipment use limitation can be reduced by planting and harvesting at the proper times and by hand planting on the steepest slopes.

This soil is poorly suited to most urban uses. Steepness of slope is a moderate limitation affecting septic tank absorption fields and dwellings without basements. These limitations can be reduced by using a step-down design for septic systems and special architectural designs for buildings or by cutting and filling to reduce the slope. Small stones are a severe limitation affecting lawns and landscaping. Grasses that can be cut high enough to avoid the stones are needed.

MaB2—Madison sandy clay loam, 2 to 6 percent slopes, eroded. This well drained soil is on medium and broad ridgetops of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 25 acres.

Typically, this Madison soil has a brownish sandy loam surface layer about 3 inches thick. The subsoil from a depth of about 3 to 34 inches is mostly reddish clay. The substratum from 34 to 60 inches is reddish saprolite that crushes to sandy loam. Many fine and medium flakes of mica are throughout the subsoil and the substratum.

Included with this soil in mapping are small areas of Durham, Cecil, and Pacolet soils and some small areas of soils that have boulders and rock outcrops. The included soils make up about 8 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Madison soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. Because of the shallowness of the surface layer and the abrupt boundary with the clayey subsoil, this soil responds to management the same as soils that have a sandy clay loam surface layer.

This soil is suited to pastureland. Suitable pasture plants include fescue, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Madison soil is poorly suited to woodland; however, loblolly pine and yellow poplar can be grown. The moderate erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting methods that least disturb the soil. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at

the proper times. Using track or wide-tired vehicles can minimize disturbance of the soil.

This soil is suited to most urban uses; however, the clayey subsoil is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field.

MaC2—Madison sandy clay loam, 6 to 10 percent slopes, eroded. This well drained soil is on narrow to medium ridgetops and broad side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 50 acres.

Typically, this Madison soil has a brownish sandy loam surface layer about 3 inches thick. The subsoil from a depth of about 3 to 34 inches is mostly reddish clay. The substratum from 34 to 60 inches is reddish saprolite that crushes to sandy loam. Many fine and medium flakes of mica are throughout the subsoil and the substratum.

Included with this soil in mapping are small areas of Durham, Cecil, and Pacolet soils and small areas of soils that have boulders and rock outcrops. Also included are a few small and medium gullies. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Madison soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of the hazard of erosion. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. Because of the thin surface layer and the abrupt boundary with the clayey subsoil, this soil responds to management the same as soils that have a sandy clay loam surface layer.

This soil is poorly suited to pastureland; however, fescue, sericea lespedeza, and clover are grown for forage. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Madison soil is poorly suited to woodland; however, loblolly pine and yellow poplar can be grown. The moderate erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using track or wide-tired vehicles can minimize disturbance of the soil.

This soil is suited to most urban uses. Steepness of slope and the clayey subsoil are moderate limitations affecting septic tank absorption fields. The problems caused by the slope can be reduced by using a step-down design for septic systems or by cutting and filling to reduce the slope. The effects of the clayey subsoil can be reduced by increasing the size of the absorption field. Steepness of slope is also a moderate limitation affecting dwellings without basements and lawns and landscaping. This limitation can be reduced by land smoothing or cutting and filling to reduce the slope and by establishing and maintaining a good sod.

MaE2—Madison sandy clay loam, 10 to 25 percent slopes, eroded. This well drained soil is on side slopes adjacent to drainageways of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 100 acres.

Typically, this Madison soil has a brownish sandy loam surface layer about 3 inches thick. The subsoil from a depth of about 3 to 34 inches is mostly reddish clay. The substratum from 34 to 60 inches is saprolite that crushes to sandy loam. Many fine and medium flakes of mica are throughout the subsoil and the substratum.

Included with this soil in mapping are small areas of Pacolet and Nason soils, soils that are sandy loam throughout, and small areas of soils that have boulders and rock outcrops. Also included are medium or large gullies. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: medium to high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Madison soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of steepness of slope and the hazard of erosion. Because of the severity of these limitations, this soil is best used as pastureland or woodland.

This soil is poorly suited to pastureland; however, fescue and sericea lespedeza are grown for forage. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Madison soil is poorly suited to woodland; however, loblolly pine can be grown. The moderate erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using track or wide-tired vehicles can minimize disturbance of the soil. Woodland generally is the best use for this soil.

This soil is poorly suited to most urban uses because of steepness of slope. This limitation is difficult to reduce, and this soil generally should not be used for most urban development. If this soil is used for urban development, a step-down design is needed for septic tank absorption fields and land smoothing or cutting and filling is needed to reduce the slope before construction of dwellings and establishment of lawns and landscaping. The effects of the slope can also be reduced by establishing and maintaining a good sod.

MaF2—Madison sandy clay loam, 25 to 60 percent slopes, eroded. This well drained soil is on side slopes adjacent to drainageways of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 150 acres.

Typically, this Madison soil has a brownish sandy loam surface layer about 3 inches thick. The subsoil from a depth of about 3 to 34 inches is mostly reddish clay. The substratum from 34 to 60 inches is reddish saprolite that crushes to sandy loam. Many fine and medium flakes of mica are throughout the subsoil and the substratum.

Included with this soil in mapping are small areas of Pacolet and Nason soils, areas of soils that have boulders and rock outcrops, and small areas of medium or large gullies. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Madison soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of steepness of slope and the hazard of erosion. Because of the severity of these limitations, this soil is best used as pastureland or woodland.

This soil is poorly suited to pastureland; however, fescue and sericea lespedeza are grown for forage. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Madison soil is poorly suited to woodland; however, loblolly pine can be grown. The moderate erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using track or wide-tired vehicles can minimize disturbance of the soil. Woodland generally is the best use for this soil.

This soil is poorly suited to most urban uses because of the steepness of slope. This limitation is very difficult to reduce, and this soil generally should not be used as sites for most urban development. For septic tank absorption fields, this limitation is extremely difficult to reduce; however, for dwellings without basements, it can be reduced if special architectural designs are used. For lawns and landscaping, the problems caused by slope can be reduced by establishing and maintaining a good sod.

NaC—Nason loam, 6 to 10 percent slopes. This well drained soil is on side slopes and ridges of the Piedmont. Slopes are irregular in shape. Individual areas of this soil generally are about 25 acres.

Typically, this Nason soil has a brownish loam surface layer about 6 inches thick. The subsoil from a depth of about 6 to 31 inches is mostly reddish clay. The substratum to a depth of about 60 inches is reddish loam and silt loam.

Included with this soil in mapping are small areas of Georgeville, Cecil, Durham, and Herndon soils. Also included are small areas of soils that have bedrock at a depth of 25 to 40 inches. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: 40 to 60 inches to soft bedrock
Shrink-swell potential: moderate

Most areas of this Nason soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include tall fescue, clover, and sericea lespedeza. Overgrazing is a major concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Nason soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine is the preferred tree to plant.

This soil is suited to most urban uses. The steepness of slope, slow permeability, and depth to bedrock are moderate limitations affecting septic tank absorption fields. These limitations can be reduced by cutting and filling to reduce the slope, by using special designs for the septic systems, or by increasing the size of the absorption field or pumping to another site. Steepness of slope and shrinking and swelling are moderate limitations affecting dwellings without basements. Cutting and filling can reduce the slope, or special architectural designs can be used. The effects of shrinking and swelling can be reduced by using special reinforced foundations or by removing unsuitable soil material and filling with suitable material. Shrinking and swelling can also be reduced if the soil is kept moist during dry periods. Steepness of slope is a moderate limitation affecting lawns and landscaping. This limitation can be reduced by land smoothing and cutting and filling to reduce slope and by establishing a good sod. This soil should be tested for dispersement before it is used for any urban purpose.

NaE—Nason loam, 10 to 25 percent slopes. This well drained soil is on side slopes and ridges of the Piedmont. Slopes are irregular in shape. Areas of this soil are dissected by numerous small streams and drainageways. Individual areas of this soil generally are about 25 acres.

Typically, this Nason soil has a grayish loam surface layer about 6 inches thick. The subsoil from a depth of about 6 to 31 inches is mostly reddish clay. The substratum to a depth of about 60 inches is reddish loam.

Included with this soil in mapping are small areas of Georgeville and Herndon soils. Also included are small areas of soils that have bedrock at a depth of 25 to 40 inches. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: 40 to 60 inches to soft bedrock
Shrink-swell potential: moderate

Most areas of this soil are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

The soil is poorly suited to cropland. Erosion is a major hazard that is difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include tall fescue, clover, and sericea lespedeza. Overgrazing is a concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Nason soil is suited to woodland. Loblolly pine is the preferred tree to plant. The moderate erosion hazard and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. The equipment use limitation can be reduced by planting and harvesting at the proper times and by keeping heavy equipment travel on slopes to a minimum.

This soil is poorly suited to most urban uses. Steepness of slope is a severe limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. This limitation can be reduced by using special designs for structures, cutting and filling to reduce the slope, land smoothing, and establishing a good sod. This soil should be tested for dispersement before it is used for any urban purpose.

NoA—Norfolk loamy sand, 0 to 2 percent slopes. This well drained soil is on broad interstream divides of the Coastal Plain. Slopes are smooth but can be slightly concave or convex. Individual areas of this soil generally are about 25 acres.

Typically, this Norfolk soil has brownish loamy sand surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 70 inches is brownish sandy clay loam. The lower part of the subsoil has mottles in shades of red, brown, and gray.

Included with this soil in mapping are small areas of Goldsboro, Grady, Rains, and Wagram soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: slow
Erosion potential: low
Depth to water table: 4 to 6 feet, January to March
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Norfolk soil are cropland. The rest is pastureland, woodland, or in miscellaneous uses.

This soil is well suited to cropland, and limitations are not significant (fig. 3).

This soil is suited to pastureland. Suitable pasture plants include bahiagrass and Coastal bermudagrass. Controlled grazing is needed for continuous high productivity.

This Norfolk soil is well suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine is the preferred tree to plant.

This soil is well suited to most urban uses; however, wetness is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by using special designs for septic systems.

NoB—Norfolk loamy sand, 2 to 6 percent slopes. This well drained soil is on broad ridges and side slopes of interstream divides of the Coastal Plain. Slopes are smooth and convex. Individual areas of this soil generally are about 100 acres.

Typically, this Norfolk soil has mostly brownish loamy sand surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 70 inches is brownish sandy clay loam. The lower part of the subsoil has mottles in shades of red, brown, and gray.

Included with this soil in mapping are small areas of Goldsboro, Grady, Faceville, Rains, and Wagram soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: low
Depth to water table: 4 to 6 feet, January to March
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Norfolk soil are cropland. The rest is pastureland, woodland, or in miscellaneous uses.

This soil is well suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants are bahiagrass and Coastal bermudagrass. Controlled grazing is needed for continuous high productivity.

This Norfolk soil is well suited to woodland, and there are no limitations for woodland use and management. Loblolly pine is the preferred tree to plant.

This soil is well suited to most urban uses; however, wetness is a moderate limitation affecting septic tank absorption fields. This limitation can be reduced by using special designs for septic systems.

PaC2—Pacolet sandy clay loam, 6 to 10 percent slopes, eroded. This well drained soil is on side slopes adjacent to drainageways of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 40 acres.

Typically, this Pacolet soil has a brownish sandy clay loam surface layer about 3 inches thick. The subsoil to a depth of about 25 inches is reddish clay. The substratum to a depth of about 65 inches is reddish clay loam underlain by loam. It has saprolite that crushes easily.

Included with this soil in mapping are small areas of

Figure 3.—Norfolk loamy sand, 0 to 2 percent slopes, is well suited to such crops as cotton.

Cecil and Rion soils. Also included are small areas of soils that have boulders or cobblestones on the surface. The included soils make up about 20 percent of the map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pacolet soil are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a significant hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion. Returning crop residue to the soil improves fertility, reduces crusting, and increases water infiltration into the soil.

This soil is suited to pastureland. Fescue is the main forage grown. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to maintain a good pasture. Grazing should be managed to protect the soil from excessive erosion.

This Pacolet soil is poorly suited to woodland; however, loblolly pine can be grown. The moderate erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation,

including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using track or wide-tired vehicles can minimize disturbance of the soil.

This soil is suited to most urban uses. Steepness of slope and the clayey subsoil are moderate limitations affecting septic tank absorption fields. Leveling, or another method to reduce the slope, or special designs for septic systems are needed. The effects of the clayey subsoil can be reduced by increasing the linear length of the absorption field. Steepness of slope is a moderate limitation affecting dwellings without basements and lawns and landscaping. This limitation can be reduced by cutting and filling to reduce the slope or by using special designs for structures.

PaD2—Pacolet sandy clay loam, 10 to 15 percent slopes, eroded. This well drained soil is on side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 35 acres.

Typically, this Pacolet soil has a brownish sandy clay loam surface layer about 3 inches thick. The subsoil to a depth of about 25 inches is reddish clay. The substratum is reddish clay loam underlain by loam. It has saprolite that crushes easily.

Included with this soil in mapping are small areas of Cecil and Rion soils and small areas of soils that have boulders or cobblestones on the surface. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pacolet soil are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

This soil is poorly suited to cropland. Because of the eroded nature of this soil, it is best used as pastureland or woodland.

This soil is poorly suited to pastureland; however, fescue can be grown for forage. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from extensive erosion.

This Pacolet soil is poorly suited to woodland; however, loblolly pine can be grown. The moderate erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using track or wide-tired vehicles can minimize disturbance of the soil.

This soil is suited to most urban uses. The clayey subsoil and steepness of slope are moderate limitations affecting septic tank absorption fields. Steepness of slope is also a moderate limitation affecting dwellings without basements and lawns and landscaping. The effects of the clayey subsoil can be reduced by increasing the linear length of the absorption field. Cutting and filling to reduce the slope or special designs for urban structures can reduce the problems caused by the steepness of slope.

PaE2—Pacolet sandy clay loam, 15 to 25 percent slopes, eroded. This well drained soil is on side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 30 acres.

Typically, this Pacolet soil has a brownish sandy loam surface layer about 3 inches thick. The subsoil to a depth of about 25 inches is reddish clay. The substratum is a reddish clay loam underlain by loam. It has saprolite that crushes easily.

Included with this soil in mapping are small areas of Cecil and Rion soils and small areas of soils that have boulders or cobblestones on the surface. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pacolet soil are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

This soil is poorly suited to cropland. Because of the eroded nature of this soil, it is best used as pastureland or woodland.

This soil is poorly suited to pastureland; however, fescue can be grown for forage. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from erosion.

This Pacolet soil is poorly suited to woodland; however, yellow poplar and shortleaf pine can be grown. The severe erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using track or wide-tired vehicles can minimize disturbance of the soil.

This soil is poorly suited to most urban uses. Steepness of slope is a severe limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. Cutting and filling to reduce the slope or special designs for structures is required.

Pe—Pantego loam. This very poorly drained soil is on broad flats adjacent to flood plains of the Wateree and Lynches Rivers. This soil is also on flood plains of some small creeks and branches and in some depressions or bays of the Coastal Plain. Slopes are nearly level. Individual areas of this soil generally are about 50 acres but range to as much as 400 acres.

Typically, this Pantego soil has a black loam surface layer about 10 inches thick. The subsurface layer from a depth of about 10 to 14 inches is grayish fine sandy loam. The subsoil to a depth of about 62 inches is mostly grayish sandy clay loam.

Included with this soil in mapping are small areas of Grady, Johnston, and Rains soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: very slow
Erosion potential: very low
Depth to water table: 0 to 1.5 feet, December to May
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pantego soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses (fig. 4).

This soil is well suited to cropland; however, the seasonal high water table is a major limitation. This limitation can be reduced by subsurface and surface drainage and by land smoothing.

This soil is poorly suited to pastureland; however, fescue and clover can be grown for forage. The seasonal high water table is a major limitation, but this limitation can be reduced by shallow surface drainage.

This Pantego soil is well suited to woodland. Loblolly pine, sweetgum, sycamore, and water tupelo are the preferred trees to plant. The severe equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired equipment. Seedling mortality can be reduced by planting suitable species at the proper times and by planting on beds.

This soil is poorly suited to most urban uses. The seasonal high water table is a severe limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. Because of the severity of this limitation and the low position of this soil on the landscape, this soil should not be used for urban development.

Pg—Pantego loam, overwash. This very poorly drained soil is on broad flats of the flood plains of the Wateree and Lynches Rivers in a zone between Pantego sandy loam and the alluvial soils closer to the river. Slopes are nearly level. Individual areas of this soil generally are about 60 acres but range to as much as 200 acres.

Typically, the surface layer of this Pantego soil is recent alluvium of brown loam about 7 inches thick that is underlain by the original 10-inch surface layer of black loam. The subsurface layer to a depth of about 21 inches is grayish fine sandy loam. The subsoil to a depth of about 69 inches is mostly gray sandy clay loam.

Included with this soil in mapping are small areas of Chewacla, Rains, and Wehadkee soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: very slow
Erosion potential: very low
Depth to water table: 0 to 1.5 feet, December to May
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pantego soil are woodland. The

Figure 4.—This area of Pantego loam will be used for a farm pond.

rest is cropland, pastureland, or in miscellaneous uses.

This soil is well suited to cropland; however, the seasonal high water table is a major limitation. This limitation can be reduced by surface and subsurface drainage, land smoothing, and bedding.

This soil is poorly suited to pastureland; however, fescue and clover can be grown for forage. The seasonal high water table is a major limitation, but this limitation can be reduced by shallow surface drainage.

This Pantego soil is well suited to woodland. Loblolly pine, sweetgum, sycamore, and water tupelo are the preferred trees to plant. The severe equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using wide-tired or track equipment. Seedling mortality can be reduced by planting suitable species at the proper times and by planting on beds.

This soil is poorly suited to most urban uses. The seasonal high water table is a severe limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. Because of the severity of this limitation and the low position of this soil on the landscape, this soil should not be used for urban development.

PnA—Pelion loamy sand, 0 to 2 percent slopes. This moderately well drained soil is on smooth or irregularly shaped slopes of the Coastal Plain and the Sand Hills. Slopes are smooth and concave. Individual areas of this soil generally are about 20 acres.

Typically, this Pelion soil has a brownish loamy sand surface layer about 6 inches thick. The subsurface layer from a depth of about 6 to 14 inches is brownish loamy sand and sandy loam. The subsoil from 14 to 37 inches is brownish sandy clay loam in the upper part and brownish clay in the lower part. Grayish mottles are in the lower part of the subsoil. The substratum is alternating thin layers of grayish sand and grayish kaolin clay.

Included with this soil in mapping are a few small

areas of Vaucluse, Ailey, Norfolk, Blanton, Goldsboro, and Rains soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: medium
Erosion potential: low
Depth to water table: perched, 1.0 to 2.5 feet, November to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pelion soil are cropland or pastureland. The rest is woodland or in miscellaneous uses.

This soil is suited to cropland; however, the seasonal high water table is a limitation. This limitation can be reduced by surface drainage and land smoothing.

This soil is suited to pastureland. Suitable pasture plants include Coastal bermudagrass and bahiagrass. Wetness is a limitation; however, this limitation can be reduced by surface drainage.

This Pelion soil is suited to woodland. Loblolly pine is the preferred tree to plant. Moderate windthrow is a concern for woodland use and management. Windthrow is difficult to control, but it can be reduced by selection of proper species.

This soil is suited to most urban uses; however, the seasonal high water table and slow permeability are severe limitations affecting septic tank absorption fields. Wetness is a severe limitation affecting dwellings without basements and a moderate limitation affecting lawns and landscaping. The effects of the seasonal high water table can be reduced by surface drainage or by adding fill material, and the effects of slow permeability can be reduced by enlarging the absorption field.

PnB—Pelion loamy sand, 2 to 6 percent slopes. This moderately well drained soil is on side slopes of the Coastal Plain and the Sand Hills. Slopes are smooth and irregular in shape. Individual areas of this soil generally are about 35 acres.

Typically, this Pelion soil has a brownish loamy sand surface layer about 6 inches thick. The subsurface layer from a depth of about 6 to 14 inches is brownish loamy sand and sandy loam. The subsoil from 14 to 37 inches is brownish sandy clay loam in the upper part and brownish clay in the lower part. Grayish mottles are in the lower part of the subsoil. The substratum is alternating thin layers of grayish sand and grayish kaolin clay.

Included with this soil in mapping are small areas of Vaucluse, Ailey, Alpin, Blanton, Wagram, and Rains soils. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: perched, 1.0 to 2.5 feet, November to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pelion soil are woodland. The rest is cropland or in miscellaneous uses.

This soil is poorly suited to cropland because of the hazard of erosion. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include Coastal bermudagrass, fescue, and sericea lespedeza. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Pelion soil is suited to woodland. Loblolly pine is the preferred tree to plant. Moderate windthrow is a concern for woodland use and management. Windthrow is difficult to control, but it can be reduced by selection of proper species.

This soil is suited to most urban uses. The seasonal high water table and slow permeability are severe limitations affecting septic tank absorption fields. Wetness is a severe limitation affecting dwellings without basements and a moderate limitation affecting lawns and landscaping. The effects of the seasonal high water table can be reduced by surface drainage or by adding fill material, and the effects of slow permeability can be reduced by increasing the size of the absorption field.

PnC—Pelion loamy sand, 6 to 10 percent slopes. This moderately well drained soil is on side slopes and knolls of the Coastal Plain and the Sand Hills. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 30 acres.

Typically, this Pelion soil has a brownish loamy sand surface layer about 6 inches thick. The subsurface layer from a depth of about 6 to 14 inches is brownish loamy sand and sandy loam. The subsoil from 14 to 37 inches

is brownish sandy clay loam in the upper part and brownish clay in the lower part. Grayish mottles are in the lower part of the subsoil. The substratum is alternating thin layers of grayish sand and grayish kaolin clay.

Included with this soil in mapping are small areas of Ailey, Alpin, Blanton, Rains, and Vaucluse soils. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: perched, 1.0 to 2.5 feet, November to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Pelion soil are woodland. The rest is cropland or in miscellaneous uses.

This soil is poorly suited to cropland because of the hazard of erosion. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include Coastal bermudagrass, fescue, and sericea lespedeza. Overgrazing is a concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing.

This Pelion soil is suited to woodland. Loblolly pine is the preferred tree to plant. Moderate windthrow is a concern for woodland use and management. Windthrow is difficult to control, but it can be reduced by selection of proper species.

This soil is suited to most urban uses. Slow permeability and wetness are severe limitations affecting septic tank absorption fields. The effects of slow permeability can be reduced by increasing the size of the absorption field. Wetness is also a severe limitation affecting dwellings without basements and a moderate limitation affecting lawns and landscaping. The effects of the seasonal high water table can be reduced by surface drainage or by adding fill material. In addition, steepness of slope is a limitation affecting lawns and landscaping. This limitation can be reduced by land smoothing, cutting and filling to reduce the slope, and establishing a good sod.

PsA—Persanti sandy loam, 0 to 2 percent slopes. This moderately well drained soil is in nearly level areas mainly in the middle and upper parts of the Coastal Plain. Individual areas of this soil generally are about 50 acres.

Typically, this Persanti soil has a brownish sandy loam surface layer about 6 inches thick. The subsoil to a depth of about 65 inches is mostly yellowish sandy clay loam underlain by clay and clay loam. Grayish mottles are in the lower part of the subsoil.

Included with this soil in mapping are small areas of Rains, Goldsboro, and Grady soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: medium
Erosion potential: low
Depth to water table: 2.0 to 3.5 feet, December to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Persanti soil are woodland. The rest is pastureland, cropland, or in miscellaneous uses.

This soil is well suited to cropland; however, the seasonal high water table is a limitation. This limitation can be reduced by surface drainage.

This soil is well suited to pastureland. Suitable pasture plants include bahiagrass and improved Coastal bermudagrass. The seasonal high water table is a concern in management. The effects of the seasonal high water table can be reduced by surface drainage, pasture rotation, proper stocking, and deferment of grazing or restricted use during the wet seasons. These practices also help maintain the pasture and soil in good condition.

This Persanti soil is well suited to woodland. Loblolly pine, sweetgum, and yellow poplar are the preferred trees to plant. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is poorly suited to most urban uses. The seasonal high water table and slow permeability are severe limitations affecting septic tank absorption fields, and wetness is a moderate limitation affecting dwellings without basements. The effects of the seasonal high water table can be reduced by using special designs for urban structures. The effects of the permeability can be reduced by increasing the linear length of the

absorption field or by using special designs for septic systems.

PxE—Poindexter silt loam, 10 to 25 percent slopes. This well drained soil is on side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 40 acres.

Typically, this Poindexter soil has a brownish silt loam surface layer about 4 inches thick. The subsurface layer from a depth of about 4 to 10 inches is brownish loam. The subsoil from 10 to 16 inches is brownish clay loam. The substratum from 16 to 25 inches is mottled brownish sandy loam and from 25 to 40 inches is mottled grayish and yellowish weathered bedrock that crushes to sandy loam. Bedrock is at a depth of 40 inches.

Included with this soil in mapping are some small areas of Georgeville, Nason, and Winnsboro soils. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: moderately slow
Available water capacity: low
Runoff: very rapid
Erosion potential: very high
Depth to water table: more than 6 feet
Depth to bedrock: 40 to 60 inches to hard bedrock
Shrink-swell potential: low

Most areas of this soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland. Erosion is a severe hazard that is very difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include fescue, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Poindexter soil is poorly suited to woodland. Loblolly pine and eastern redcedar are the preferred trees to plant. The moderate erosion hazard and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using wide-tired vehicles and restricting heavy equipment traffic on the slopes can minimize disturbance of the soil.

This soil is poorly suited to most urban uses. Steepness of slope is a severe limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. Special designs for structures are needed.

Qz—Quartzipsamments, gently rolling. This well drained soil is the material that remains in areas from which the original soil has been removed to a depth of more than 3 feet. This soil is in mining areas near Elgin and Westville and along the Wateree River and in several areas throughout the county where the soil has been removed to a depth of 5 feet for use as a base for paved highways. Slopes generally are complex and irregular in shape and range up to 10 percent. Individual areas of this soil generally are about 8 acres but range to as much as 200 acres.

This soil is a nonhomogenous mixture consisting largely of sandy material with some intermingled loamy and clayey material. In some areas, the soil material has been excavated to a depth of more than 10 feet, but the remaining material is highly weathered and can support vegetation.

Included with this soil in mapping are small areas of such material as boulders of granite and small areas of Ailey, Alpin, Blanton, Cecil, Georgeville, Pelion, Lakeland, Madison, Norfolk, Pacolet, and Vaucluse soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: variable
Available water capacity: variable
Runoff: variable
Erosion potential: variable
Depth to water table: variable
Depth to bedrock: variable
Shrink-swell potential: low

Most areas of Quartzipsamments are in native grasses, rhododendron, or loblolly pine.

This soil generally is poorly suited to most uses. The hazard of erosion, absence of drainage patterns in and away from the area, rock fragments and gravel, steep cutbanks, poor tilth, and low fertility are limitations. These limitations are difficult to reduce. A careful onsite investigation is needed to determine suitability and limitations for any proposed use.

Ra—Rains sandy loam. This poorly drained soil is on broad flats and in depressional areas of the Coastal Plain. Slopes are nearly level. Individual areas of this

soil generally are about 35 acres.

Typically, this Rains soil has grayish sandy loam surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 68 inches is grayish sandy clay loam that has yellowish mottles in the lower part.

Included with this soil in mapping are small areas of Persanti, Grady, and Goldsboro soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: slow
Erosion potential: very low
Depth to water table: 0 to 1 foot, November to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Rains soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is well suited to cropland; however, the high water table is a limitation. This limitation can be reduced by surface or subsurface drainage and by land smoothing. With proper drainage and good management practices, this soil can produce high yields.

This soil is well suited to pastureland. Suitable pasture plants include bahiagrass, fescue, and Dallisgrass. The high water table is a limitation; however, this limitation can be reduced by shallow drainage and by land smoothing. Pastures should not be grazed when the soil is wet.

This Rains soil is well suited to woodland. Loblolly pine and sweetgum are the preferred trees to plant. The severe equipment use limitation and seedling mortality are concerns for woodland use or management. Seedling mortality can be reduced by planting the proper species at the proper times and by planting on beds. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired equipment.

This soil is poorly suited to most urban uses. The high water table is a severe limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. This limitation can be reduced by pumping effluent to another site or by adding suitable fill material.

RoD—Rion gravelly sandy loam, 6 to 15 percent slopes. This well drained soil is on side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 12 acres.

Typically, this Rion soil has a grayish gravelly sandy loam surface layer about 7 inches thick. The subsoil from a depth of about 7 to 26 inches is brownish gravelly sandy loam and sandy clay loam. The substratum to a depth of about 60 inches is partly weathered bedrock that can be crushed to gravelly loamy sand and gravelly sandy loam.

Included with this soil in mapping are small areas of Madison and Pacolet soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: low
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Rion soil are woodland. Some areas are pastureland.

This soil is poorly suited to cropland because of the hazard of erosion. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, bahiagrass, clover, and sericea lespedeza. Overgrazing is a concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Rion soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine, shortleaf pine, and yellow poplar are the preferred trees to plant.

This soil is suited to most urban uses. The clayey subsoil and steepness of slope are moderate limitations affecting septic tank absorption fields. These limitations can be reduced by using a step-down design for the septic system, by cutting and filling to reduce slope, and by enlarging the absorption field. Steepness of slope is a moderate limitation affecting dwellings without basements. Cutting and filling to reduce the slope or using special architectural designs can reduce this limitation. Steepness of slope and small stones are moderate limitations affecting lawns and landscaping. These limitations can be reduced by land smoothing, cutting and filling to reduce the slope, and establishing

a good sod of tall-growing grass.

RoF—Rion gravelly sandy loam, 15 to 40 percent slopes. This well drained soil is on side slopes of the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 8 acres.

Typically, this Rion soil has a grayish gravelly sandy loam surface layer about 7 inches thick. The subsoil from a depth of about 7 to 26 inches is brownish gravelly sandy clay loam. The substratum to a depth of about 60 inches is partly weathered bedrock that can be crushed to gravelly loamy sand and gravelly sandy loam.

Included with this soil in mapping are small areas of Madison and Pacolet soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: low
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Rion soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of the hazard of erosion and steepness of slope. These limitations are difficult to reduce.

This soil is poorly suited to pastureland; however, fescue, bahiagrass, sericea lespedeza, and clover can be grown for forage. Overgrazing is a concern in management. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Rion soil is suited to woodland. Loblolly pine, shortleaf pine, and yellow poplar are the preferred trees to plant. The moderate erosion hazard, seedling mortality, and equipment use limitation are concerns for woodland use and management. Erosion can be controlled by using planting and harvesting methods that least disturb the soil. Seedling mortality can be reduced by planting at the proper times, planting on beds, and controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling. The equipment use limitation can be reduced by planting and harvesting at the proper times. Using wide-tired or track vehicles, restricting heavy equipment traffic on slopes, planting trees by hand, and placing roads and loading areas in the least sloping areas can minimize disturbance of the soil.

This soil is poorly suited to most urban uses. Steepness of slope is a severe limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. Because of the severity of this limitation, this soil should not be used as sites for septic tank absorption fields; however, the severity of this limitation can be reduced by using special designs for septic systems or by pumping the effluent to another site. Special architectural designs for structures, land smoothing, cutting and filling to reduce the slope, and establishing a good sod can also reduce the severity of this limitation.

SuA—Summerton sandy loam, 0 to 2 percent slopes. This well drained soil is on broad, smooth slopes along stream terraces of the Coastal Plain. Slopes are nearly level. Individual areas of this soil generally are about 100 acres.

Typically, this Summerton soil has a reddish sandy loam surface layer about 10 inches thick. The subsoil to a depth of about 75 inches is mostly reddish clay and clay loam.

Included with this soil in mapping are small areas of Persanti, Faceville, and Norfolk soils. The included soils make up about 15 percent of this map unit.

Important Soil Properties

Permeability: moderately slow
Available water capacity: very low
Runoff: medium
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most of this Summerton soil is cropland. The rest is pastureland, woodland, or in miscellaneous uses.

This soil is well suited to cropland, and management problems are not significant.

This soil is well suited to pastureland. Suitable pasture plants include improved Coastal bermudagrass and bahiagrass. Pasture management problems are not significant; however, pasture rotation, proper plant species, proper stocking, and limited grazing help to maintain the soil and pasture in good condition.

This Summerton soil is suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine is the preferred tree to plant.

This soil is well suited to most urban uses; however,

the moderately slow permeability is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the linear length of the absorption field or by using special designs for septic systems.

Tc—Toccoa-Cartecay complex. This complex consists of moderately well drained Toccoa soil and somewhat poorly drained Cartecay soil. These soils are on narrow to medium flood plains of the Piedmont. Toccoa soil generally is on elongated terraces adjacent to streams, and Cartecay soil generally is in elongated, low areas between the Toccoa soil and the adjacent upland soils. Slopes are nearly level. Individual areas of this complex generally are about 25 acres.

This complex is about 40 percent Toccoa soil and 35 percent Cartecay soil. The rest is included soils. The areas of these soils are too intricately mixed or too small to be mapped separately at the selected scale.

Typically, this Toccoa soil has a brownish loam surface layer about 9 inches thick. The underlying material to a depth of about 60 inches is brownish sandy loam that has thin strata of brownish loamy fine sand and brown loam.

Important Properties of Toccoa Soil

Permeability: moderately rapid
Available water capacity: moderate
Runoff: slow
Erosion potential: very low
Depth to water table: 2.5 to 5.0 feet, December to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: occasional, for brief periods, January to December

Typically, this Cartecay soil has a brownish silt loam surface layer about 9 inches thick. The upper part of the underlying material is reddish loamy sand and loam. The lower part is grayish and brownish sandy loam that has strata of loam and loamy sand.

Important Properties of Cartecay Soil

Permeability: moderately rapid
Available water capacity: moderate
Runoff: slow
Erosion potential: very low
Depth to water table: 0.5 foot to 1.5 feet, January to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: occasional, for brief periods, December to March

Included with these soils in mapping are small areas of Chewacla, Congaree, and Wehadkee soils and small areas of gravelly soils. The included soils make up about 25 percent of this map unit.

Most areas of these Toccoa and Cartecay soils are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, the seasonal high water table and the hazard of flooding are limitations. Flooding can be controlled by dikes or other water-control structures. The effects of the seasonal high water table can be reduced by clearing stream channels and by planting at the proper times; however, these soils generally are difficult to drain because of inadequate drainage outlets.

These soils are suited to pastureland. Suitable pasture plants include fescue, sericea lespedeza, and clover. The seasonal high water table is a limitation, and flooding is a hazard. Pastures should not be grazed when the soil is wet. Pasture rotation, proper plant species, proper stocking, and limited grazing help to control overgrazing.

These Toccoa and Cartecay soils are well suited to woodland. Loblolly pine, sweetgum, yellow poplar, American sycamore, and Eastern cottonwood are the preferred trees to plant. The moderate equipment use limitation is a concern for woodland use and management on Cartecay soil. This limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired equipment.

These soils are poorly suited to most urban uses because of the seasonal high water table and the hazard of flooding. Because of the low position of these soils on the landscape and the difficulty of reducing these limitations, these soils generally should not be used as sites for urban development.

To—Toccoa sandy loam. This moderately well drained soil is on flood plains of the Piedmont and Coastal Plain in elongated areas adjacent to the stream. Slopes are nearly level. Individual areas of this soil generally are about 25 acres.

Typically, this Toccoa soil has a brownish sandy loam surface layer about 9 inches thick. The underlying material to a depth of about 60 inches is brownish sandy loam that has thin strata of brownish loamy fine sand and brownish loam.

Included with this soil in mapping are small areas of Congaree and Chewacla soils and some small areas of soils that are sandy throughout the profile. The included soils make up about 10 percent of this map unit.

Important Soil Properties

Permeability: moderately rapid
Available water capacity: moderate
Runoff: slow
Erosion potential: very low
Depth to water table: 2.5 to 5.0 feet, December to April
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: occasional, for brief periods, January to December

Most areas of this Toccoa soil are cropland or pastureland. The rest is woodland or in miscellaneous uses.

This soil is suited to cropland; however, flooding is a major hazard. Flooding can be controlled by dikes or other water-control structures.

This soil is suited to pastureland. Suitable pasture plants include fescue, sericea lespedeza, and clover. Flooding is a major hazard.

This Toccoa soil is well suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine, yellow poplar, and American sycamore are the preferred trees to plant.

This soil is poorly suited to most urban uses. Wetness and the hazard of flooding are severe limitations affecting septic tank absorption fields. The hazard of flooding is also a severe limitation affecting dwellings without basements and a moderate limitation affecting lawns and landscaping. Because of the low position of this soil on the landscape and the difficulty of controlling flooding, this soil generally should not be used as sites for urban development.

VaC—Vaucluse loamy sand, 6 to 10 percent slopes. This well drained soil is on small side slopes of the Coastal Plain and the Sand Hills. Slopes are smooth and convex. Individual areas of this soil generally are about 20 acres.

Typically, this Vaucluse soil has a brownish loamy sand surface layer about 5 inches thick. The upper part of the subsoil to a depth of about 15 inches is reddish sandy clay loam. The lower part to a depth of about 54 inches is reddish sandy clay loam and sandy loam that is dense and brittle. The substratum from 54 to 65 inches is reddish sandy loam.

Included with this soil in mapping are a few small areas of Ailey, Alpin, Blanton, and Pelion soils. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: low
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Vaucluse soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland because of droughtiness and the hazard of erosion. Drought-tolerant crops, residue management, conservation tillage, and irrigation are needed. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include Coastal bermudagrass and bahiagrass. Erosion and overgrazing are concerns in management. Erosion can be controlled by establishing a good sod. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Vaucluse soil is suited to woodland. Loblolly pine is the preferred tree to plant. Moderate windthrow is a concern for woodland use and management (fig. 5). Windthrow is difficult to control, but it can be reduced by selection of proper species.

This soil is suited to most urban uses. The slow permeability is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field or by placing the filter lines in more permeable material. Steepness of slope is a moderate limitation affecting dwellings without basements. Steepness of slope and droughtiness are moderate limitations affecting lawns and landscaping. Land smoothing, cutting and filling to reduce the slope, establishing a good sod, and irrigation can help.

VaD—Vaucluse loamy sand, 10 to 15 percent slopes. This well drained soil is on side slopes of the Coastal Plain and the Sand Hills. Slopes are smooth and convex. Individual areas of this soil generally are about 25 acres.

Typically, this Vaucluse soil has a brownish loamy sand surface layer about 5 inches thick. The upper part of the subsoil to a depth of about 15 inches is reddish sandy clay loam. The lower part to a depth of about 54 inches is a reddish sandy clay loam and sandy loam that is dense and brittle. The substratum from 54 to 65 inches is reddish sandy loam.

Included with this soil in mapping are a few small areas of Ailey, Alpin, Norfolk, Blanton, and Pelion soils.

Figure 5.—Vaucluse loamy sand, 6 to 10 percent slopes, is mostly woodland. Windthrow is a concern in management.

The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: low
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Vaucluse soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is poorly suited to cropland. It should not be used as cropland because of the severe hazard of erosion.

This soil is suited to pastureland. Suitable pasture plants include Coastal bermudagrass and bahiagrass. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Vaucluse soil is suited to woodland. Loblolly pine is the preferred tree to plant. Moderate windthrow is a concern for woodland use and management. Windthrow is difficult to control, but it can be reduced by selection of proper species.

This soil is suited to most urban uses. The slow

permeability is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field or by placing the filter lines in more permeable material. Steepness of slope is a moderate limitation affecting dwellings without basements. Steepness of slope and droughtiness are moderate limitations affecting lawns and landscaping. Land smoothing, cutting and filling to reduce the slope, establishing a good sod, and irrigating can help.

WaB—Wagram sand, 0 to 6 percent slopes. This well drained soil is on ridgetops of the Sand Hills and the Coastal Plain. Slopes are smooth and convex. Individual areas of this soil generally are about 45 acres.

Typically, this Wagram soil has a brownish sand surface layer about 8 inches thick. The subsurface layer from a depth of about 8 to 31 inches is brownish sand. The subsoil from 31 to 70 inches is brownish sandy clay loam.

Included with this soil in mapping are small areas of Ailey, Blanton, Goldsboro, Pelion, and Norfolk soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: low
Runoff: slow
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Wagram soil is cropland or pastureland. The rest is woodland or in miscellaneous uses.

This soil is suited to cropland; however, droughtiness and the low nutrient-holding capacity are limitations. Droughtiness can be reduced by proper selection of crops, crop residue management, conservation tillage, and irrigation. Frequent applications of fertilizer and lime are needed. Stripcropping, conservation tillage, windbreaks, and cover crops can reduce soil blowing, which is a concern in management.

This soil is well suited to pastureland. Suitable pasture plants include Coastal bermudagrass, bahiagrass, and sericea lespedeza. The low nutrient-holding capacity is a limitation, and overgrazing is a concern in management. Frequent applications of fertilizer and lime are needed. Overgrazing can be controlled by pasture rotation, proper stocking, and limited grazing.

This Wagram soil is suited to woodland. Loblolly and longleaf pines are the preferred trees to plant. The moderate equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by harvesting and planting at the proper times. Seedling mortality can be reduced by planting the proper species at the proper times, by planting on beds, and by controlling competing vegetation by good site preparation, including burning, cutting, spraying, or girdling.

This soil is well suited to most urban uses, and limitations affecting septic tank absorption fields or dwellings without basements are not significant. Droughtiness and the sandy texture are moderate limitations affecting lawns and landscaping. Frequent applications of fertilizer, lime, and water are needed.

We—Wehadkee silt loam. This poorly drained soil is on flood plains of the Piedmont and the Coastal Plain. Slopes are nearly level. Individual areas of this soil generally are about 75 acres.

Typically, this Wehadkee soil has a grayish silt loam surface layer about 9 inches thick. The subsoil from a depth of about 9 to 46 inches is grayish loam or silt loam. The substratum from 46 to 70 inches is grayish and brownish sandy loam.

Included with this soil in mapping are small areas of Chewacla, Grady, and Johnston soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: high
Runoff: very slow
Erosion potential: very low
Depth to water table: 0 to 2.5 feet, December to May
Depth to bedrock: more than 5 feet
Shrink-swell potential: low
Flooding: frequent, for brief periods, November to June

Most areas of this Wehadkee soil are in water-tolerant hardwoods. The rest is pastureland, cropland, or in miscellaneous uses.

This soil is suited to cropland; however, the hazard of flooding and the high water table are limitations. These limitations are difficult to reduce.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, sericea lespedeza, and bahiagrass. Limitations affecting pastureland are not significant; however, overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Wehadkee soil is well suited to woodland. Loblolly pine, sycamore, yellow poplar, and cottonwood are the preferred trees to plant. The severe equipment use limitation and seedling mortality are concerns for woodland use and management. The equipment use limitation can be reduced by planting and harvesting at the proper times and by using track or wide-tired vehicles. Seedling mortality can be reduced by planting at the proper times, by planting on beds, and by controlling competing vegetation by good site preparation, including burning, spraying, cutting, or girdling.

This soil is poorly suited to most urban uses. The hazard of flooding and the high water table are severe limitations affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. Because of the low position of this soil on the landscape and the difficulty of reducing these limitations, this soil generally should not be used for urban development.

WkA—Wickham fine sandy loam, 0 to 2 percent slopes. This well drained soil is in flat areas on terraces of the Coastal Plain and the Piedmont. Slopes are nearly level. Individual areas of this soil generally are about 8 acres.

Typically, this Wickham soil has brownish fine sandy loam surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 60 inches is reddish sandy clay loam.

Included with this soil in mapping are some small areas of Altavista, Georgeville, and Nason soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: low
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Wickham soil are cropland or pastureland. The rest is woodland or in miscellaneous uses.

This soil is well suited to cropland, and limitations are not major.

This soil is well suited to pastureland. Suitable pasture plants include fescue, bahiagrass, sericea lespedeza, and clover. For pastureland, limitations are not significant; however, overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Wickham soil is well suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is well suited to most urban uses, and limitations are not significant.

WkB—Wickham fine sandy loam, 2 to 6 percent slopes. This well drained soil is on side slopes of terraces of the Coastal Plain and the Piedmont. Slopes are smooth and generally are convex. Individual areas of this soil generally are about 8 acres.

Typically, this Wickham soil has brownish fine sandy loam surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 60 inches is reddish sandy clay loam.

Included with this soil in mapping are some small areas of Altavista, Georgeville, and Greenville soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: medium
Erosion potential: medium
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Wickham soil are cropland or pastureland. The rest is woodland or in miscellaneous uses.

This soil is well suited to cropland; however, erosion is a hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is well suited to pastureland. Suitable pasture plants include fescue, bahiagrass, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Wickham soil is well suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is well suited to most urban uses, and limitations are not significant.

WkD—Wickham fine sandy loam, 6 to 15 percent slopes. This well drained soil is on narrow side slopes of terraces of the Coastal Plain and the Piedmont. Slopes are irregular in shape and convex. Individual areas of this soil generally are about 8 acres.

Typically, this Wickham soil has brownish fine sandy loam surface and subsurface layers about 14 inches thick. The subsoil from a depth of about 14 to 60 inches is reddish sandy clay loam.

Included with this soil in mapping are small areas of Georgeville and Pacolet soils. The included soils make up about 20 percent of this map unit.

Important Soil Properties

Permeability: moderate
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: more than 5 feet
Shrink-swell potential: low

Most areas of this Wickham soil are pastureland. The rest is cropland, woodland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, bahiagrass, sericea lespedeza, and clover. Overgrazing is a concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Wickham soil is well suited to woodland, and limitations affecting woodland use and management are not significant. Loblolly pine and yellow poplar are the preferred trees to plant.

This soil is well suited to most urban uses; however, steepness of slope is a moderate limitation affecting septic tank absorption fields, dwellings without basements, and lawns and landscaping. This limitation can be reduced by cutting and filling to reduce the slope, by using special designs for urban structures, and by establishing a good sod.

WnB—Winnsboro loam, 2 to 6 percent slopes. This well drained soil is on medium to broad ridges of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 60 acres.

Typically, this Winnsboro soil has a mostly brownish loam surface layer about 9 inches thick. The subsoil from a depth of about 9 to 27 inches is brownish clay. The substratum from 27 to 46 inches is mottled yellowish and reddish sandy clay loam and from 46 to 60 inches is weathered rock that is mottled in shades of red and brown.

Included with this soil in mapping are small areas of Georgeville, Nason, Iredell, and Poindexter soils. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: medium
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: 40 to 60 inches to soft bedrock
Shrink-swell potential: high

Most areas of this Winnsboro soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is well suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing.

This Winnsboro soil is poorly suited to woodland because of moderate productivity, although limitations affecting woodland use and management are not significant. Eastern redcedar and loblolly pine are the preferred trees to plant.

This soil is poorly suited to most urban uses. The slow permeability is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field.

WnC—Winnsboro loam, 6 to 10 percent slopes. This well drained soil is on medium to broad ridges of the Piedmont. Slopes are smooth and convex. Individual areas of this soil generally are about 30 acres.

Typically, this Winnsboro soil has a mostly brownish loam surface layer about 9 inches thick. The subsoil from a depth of about 9 to 27 inches is brownish clay. The substratum from 27 to 46 inches is mottled yellowish and reddish sandy clay loam and from 46 to 60 inches is weathered bedrock that is mottled in shades of red and brown.

Included with this soil in mapping are small areas of Georgeville, Nason, Iredell, and Poindexter soils. The included soils make up about 25 percent of this map unit.

Important Soil Properties

Permeability: slow
Available water capacity: moderate
Runoff: rapid
Erosion potential: high
Depth to water table: more than 6 feet
Depth to bedrock: 40 to 60 inches to soft bedrock
Shrink-swell potential: high

Most areas of this Winnsboro soil are woodland. The rest is cropland, pastureland, or in miscellaneous uses.

This soil is suited to cropland; however, erosion is a major hazard. Contour farming, terraces, conservation tillage, cover crops, and stripcropping help to control erosion.

This soil is suited to pastureland. Suitable pasture plants include fescue, clover, and sericea lespedeza. Overgrazing is a major concern in management. Pasture rotation, proper stocking, and limited grazing help to control overgrazing. Grazing should be managed to protect the soil from excessive erosion.

This Winnsboro soil is poorly suited to woodland because of moderate productivity, although limitations affecting woodland use and management are not significant. Eastern redcedar and loblolly pine are the preferred trees to plant.

This soil is poorly suited to most urban uses. The slow permeability is a severe limitation affecting septic tank absorption fields. This limitation can be reduced by increasing the size of the absorption field. Steepness of slope is a moderate limitation affecting dwellings without basements and lawns and landscaping. This limitation can be reduced by cutting and filling to reduce the slope, by using special designs for structures, and by establishing and maintaining a good sod.

Prime Farmland

In this section, prime farmland is defined and discussed, and the prime farmland soils in the Kershaw County area are listed.

Prime farmland is one of several kinds of important farmland defined by the U.S. Department of Agriculture. It is of major importance in meeting the nation's short- and long-range needs for food and fiber. The acreage of high-quality farmland is limited, and the U.S. Department of Agriculture recognizes that government at local, state, and federal levels, as well as individuals, must encourage and facilitate the wise use of our nation's prime farmland.

Prime farmland soils, as defined by the U.S. Department of Agriculture, are soils that are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have properties that are favorable for the economic production of sustained high yields of crops. The soils need only to be treated and managed using acceptable farming methods. The moisture supply, of course, must be adequate, and the growing season has to be sufficiently long. Prime farmland soils produce the highest yields with minimal inputs of energy and economic resources. Farming these soils results in the least damage to the environment.

Prime farmland soils may presently be in use as cropland, pasture, or woodland, or they may be in other uses. They are used for producing food or fiber or are available for these uses. Urban or built-up land, public land, and water areas cannot be considered prime farmland. Urban or built-up land is any contiguous unit of land 10 acres or more in size that is used for such purposes as housing, industrial, and commercial sites, sites for institutions or public buildings, small parks, golf courses, cemeteries, railroad yards, airports, sanitary landfills, sewage treatment plants, and water control structures. Public land is land not available for farming in national forests, national parks, military reservations, and state parks.

Prime farmland soils usually get an adequate and dependable supply of moisture from precipitation or irrigation. The temperature and growing season are favorable. The acidity or alkalinity level of the soils is acceptable. The soils have few or no rocks and are permeable to water and air. They are not excessively erodible or saturated with water for long periods and are not subject to frequent flooding during the growing season. The slope ranges mainly from 0 to 6 percent.

Nearly 20 percent, or about 93,000 acres, of the soils in the Kershaw County area is prime farmland. Prime farmland is throughout the county but mostly in the southern part. About a third of the prime farmland is used for crops, mainly corn and soybeans, which account for about 80 percent of the income from crops.

The following map units, or soils, make up prime farmland in the Kershaw County area. The location of each map unit is shown on the detailed soil maps at the back of this publication. The extent of each unit is given in table 4. The soil qualities that affect use and management are described in the section "Detailed Soil Map Units." This list does not constitute a recommendation for a particular land use.

Soils that have limitations, such as a high water table or flooding, may qualify as prime farmland if these limitations are overcome by such measures as drainage or flood control. In the following list, the measures needed to overcome the limitations of a map unit, if any, are shown in parentheses after the map unit name. Onsite evaluation is necessary to determine if the limitations have been overcome by the corrective measures.

AtA	Altavista loam, 0 to 2 percent slopes
CeB	Cecil sandy loam, 2 to 6 percent slopes
Ch	Chewacla loam (where protected from flooding or not frequently flooded during the growing season)
Co	Congaree loam (where protected from flooding or not frequently flooded during the growing season)
DuB	Durham loamy sand, 2 to 6 percent slopes
FaA	Faceville loamy sand, 0 to 2 percent slopes
FaB	Faceville loamy sand, 2 to 6 percent slopes

GeB	Georgeville loam, 2 to 6 percent slopes
GoA	Goldsboro loamy sand, 0 to 2 percent slopes
GvB	Greenville sandy loam, 2 to 6 percent slopes
HeB	Helena sandy loam, 2 to 6 percent slopes
HrB	Herndon loam, 2 to 6 percent slopes
NoA	Norfolk loamy sand, 0 to 2 percent slopes
NoB	Norfolk loamy sand, 2 to 6 percent slopes
PsA	Persanti sandy loam, 0 to 2 percent slopes
SuA	Summerton sandy loam, 0 to 2 percent slopes
To	Toccoa sandy loam (where protected from flooding or not frequently flooded during the growing season)
WkA	Wickham fine sandy loam, 0 to 2 percent slopes
WkB	Wickham fine sandy loam, 2 to 6 percent slopes

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis for predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland and woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in the survey area. The survey can help planners to maintain or create a land use pattern that is in harmony with nature.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

Gene Hardee, conservation agronomist, Soil Conservation Service, helped prepare this section.

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed Soil Map Units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

About 80,000 acres in the Kershaw County area was used as pastureland, hayland, or cropland in 1980, according to the Kershaw County and the Lancaster County Soil and Water Conservation Districts. Of this, about 35,000 acres was used for field crops, mainly soybeans, corn, wheat, and rye, and about 550 acres was used for orchards, mainly pecans and peaches.

The soils in the Kershaw County area are well suited to increased production of food. In 1967, according to the County Resources Inventory, more than 200,000 acres of potentially good cropland was used for timber or pasture. In addition to conversion of this land to cropland, the production of food can be increased by extending the latest crop production technology to all cropland in the county. This soil survey can greatly facilitate the application of such technology.

In general, the soils that are well suited to crops and pasture are also well suited to urban development. According to the 1982 County Resources Inventory, about 13,500 acres in Kershaw County and 750 acres in the included part of Lancaster County are urban and built-up land. Urban and built-up land have increased at the rate of about 500 acres per year. The use of this soil survey to help make land use decisions that will influence the future role of farming in the county is discussed in the section "Broad Land Use Considerations."

Soil erosion is a major concern on about 50 percent

of the land in the Kershaw County area. It is a hazard on 70 percent of the pastureland and cropland. Water erosion generally is a hazard on soils that have slopes of more than 2 percent or that have very long slopes of 1 to 2 percent. Erosion is a hazard on many soils that are used for crops. Wind erosion is also a concern on clean-tilled, sandy soils; however, the main problem is damage to young plants rather than actual soil loss.

Loss of the surface layer through erosion reduces productivity and pollutes steams. Productivity is reduced as the surface layer is lost and part of the subsoil is incorporated into the plow layer. Loss of the surface layer is especially damaging on soils that have a clayey subsoil, for example, on Cecil, Faceville, Georgeville, Greenville, Herndon, Lugoff, Madison, Summerton, and Winnsboro soils, and on soils that have a layer in or below the subsoil that limits the depth of the root zone. Such layers include a dense, somewhat brittle layer, such as that in Vaucluse soils. Erosion also reduces productivity on deep, sandy soils, such as Alpin, Blanton, and Wagram soils.

Soil erosion on farmland also results in sediment entering streams. Control of erosion minimizes the pollution of streams by sediment and improves the quality of water for municipal use, recreation, and use by fish and wildlife.

In some sloping fields, the original friable surface layer has eroded away leaving clayey spots. Seedbed preparation and tillage are difficult on these spots. Such spots are common on the most sloping part of intensively cropped areas of Cecil, Faceville, Georgeville, Greenville, Herndon, Lugoff, and Madison soils.

Water erosion is best controlled by a combination of structural measures that remove excess water from the field and cropping and tillage systems that provide surface cover and reduce runoff. Such structural measures as diversions, terraces, and grassed waterways reduce the length of slope and remove excess water from the field.

Contour tillage reduces the amount and velocity of runoff. Sod crops in the cropping system and tillage that leaves protective residue on the surface provide protective surface cover, reduce runoff, and increase infiltration. On livestock farms that require pasture and hay, the legume and grass forage crops in the cropping system reduce erosion on sloping land and provide nitrogen for the following crop.

Terraces and diversions are effective in erosion control systems on deep, well drained soils that have uniform slopes, such as Cecil, Durham, Faceville, Greenville, Norfolk, and Wickham soils. However, these practices concentrate water and are not adapted on the less stable sandy soils, such as Ailey, Alpin, Blanton, Lakeland, and Wagram soils. On these soils, effective erosion control systems generally consist of such practices as contour farming, contour stripcropping, and conservation tillage, which reduce the amount and velocity of runoff and do not concentrate the runoff.

Information on the design of erosion control practices for each kind of soil in the Kershaw County area is available in the local office of the Soil Conservation Service.

Damage to young plants by soil blowing is a major concern in management on Ailey, Alpin, Blanton, Lakeland, Norfolk, Pelion, Vaucluse, and Wagram soils. Damage is especially bad in extensive fields that are not protected by plant cover. Conservation tillage, permanently vegetated strips, and strips of close-growing crops protect sandy soils that are subject to blowing.

Soil drainage is a major concern in management on about 20 percent of the soils in the Kershaw County area; however, drainage to the extent needed for cropland and hayland is feasible on only about 55 percent of these soils. Drainage commonly is feasible on Altavista, Cantey, Goldsboro, Grady, Pelion, and Persanti soils and in some areas of Chewacla and Pantego soils. Because of inadequate outlets and the hazard of frequent flooding, drainage is generally not feasible on Cartecay, Dorovan, Johnston, Toccoa, and Wehadkee soils. Congaree and Toccoa soils need protection from flooding.

Low available water capacity is a limitation on Ailey, Alpin, Blanton, Lakeland, and Wagram soils. This limitation can be reduced through crop residue management, proper crop selection, and irrigation. These soils are well suited to pasture grasses, such as bahiagrass and bermudagrass, and drought-tolerant crops, such as grain sorghum. Because of the rapid leaching of nutrients from these soils, frequent applications of fertilizer and lime are needed for good plant growth.

Gravel on the surface is a limitation to tillage of the Lugoff and Rion soils. Conservation tillage systems reduce the number of tillage operations needed to produce crops on these soils.

Soil fertility is naturally low in all soils in the Kershaw County area except for Iredell and Winnsboro soils, which have medium soil fertility. Regular applications of lime and fertilizer are needed. Nearly all of the soils are naturally medium acid, strongly acid, or very strongly acid. Commonly, they require regular applications of ground limestone to raise and maintain the pH level

sufficient for good crop growth. Available phosphorus and potash are naturally low in most of the soils. Split applications of fertilizer are needed on the deep, sandy soils to reduce losses by leaching. On all soils, additions of lime and fertilizer should be based on the results of soil tests, on the need of the crop, and on the expected level of yields. The Cooperative Extension Service can help in determining the amounts of fertilizer and lime to apply.

Soil tilth is an important factor in the germination of seeds and in the infiltration of water into the soil. The surface layer of most soils in the Kershaw County area is sand or loamy sand. Consequently, the surface layer is granular, porous, and has weak structure. These conditions generally are ideal for good germination of seeds and infiltration of water; however, the content of organic matter in these soils generally is very low and the retention of moisture in the surface layer is low.

Fall tillage generally is not recommended. Cropland is mostly sloping soils that are subject to damaging water erosion or to soil blowing if the soil is tilled in the fall. Fall tillage is used for some crops to control insects and disease. In such cases, a winter cover crop needs to be planted following the fall tillage.

Field crops suited to the soils and climate of the Kershaw County area include many that are not commonly grown. Soybeans, corn, and cotton are the principal row crops. A small acreage is used for tobacco, peanuts, and grain sorghum. Wheat and rye are the common close-growing crops; however, oats, barley, pearl millet, sudangrass, and several close-growing legumes, such as alfalfa, arrowleaf clover, crimson clover, and sericea lespedeza, can be grown for forage or seed. The principal perennial grasses grown for forage are bahiagrass, Coastal bermudagrass, and tall fescue.

Special crops include vegetables, small fruits, peaches, and pecans. Small acreages are used for melons, field peas, lima beans, sweet corn, tomatoes, collards, turnips, strawberries, and blueberries. Large areas can be adapted to these and other special crops, such as grapes.

Deep soils that have good natural drainage, moderate to high available water capacity, and that warm early in the spring are especially well suited to many vegetables. Crops generally can be planted and harvested early on Cecil, Faceville, Greenville, Lugoff, Norfolk, Summerton, Wagram, and Wickham soils.

The latest information and suggestions for growing crops can be obtained from local offices of the Cooperative Extension Service and the Soil Conservation Service.

Yields Per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification *(5)* shows, in a general way, the suitability of soils for use as cropland. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major, and generally expensive, landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for

woodland, and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and map unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode, but they have other limitations, impractical to remove, that limit their use. There are no class V soils in the survey area.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production. There are no class VIII soils in the survey area.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, or *s*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless a close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); and *s* shows that the soil is limited mainly because it is shallow, droughty, or stony.

There are no subclasses in class I because the soils of this class have few limitations. The soils in class V are subject to little or no erosion, but they have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation. Class V contains only the subclasses indicated by *w* or *s*.

The acreage of soils in each capability class and subclass is shown in table 6. The capability classification of each map unit is given in the section "Detailed Soil Map Units."

Woodland Management and Productivity

Norman Runge, forester, Soil Conservation Service, helped prepare this section.

This section explains how soils affect tree growth and forest management in the Kershaw County area.

Originally, the county was mainly forested. Forests now cover 79 percent, or 396,135 acres, of the county. Good stands of commercial trees are produced. Pine trees grow mostly on the hills, and hardwoods generally are dominant on the bottom lands along rivers and creeks.

Southern pine and upland hardwood forest types make up 88 percent of the forest land. Longleaf, slash, loblolly, and shortleaf pines are dominant. Upland hardwoods include oak and hickory. The remaining forest land is bottom land hardwood forest types.

The commercial value of forest products is substantial but is much below the potential productive capacity. Present growth, however, is almost double the amount harvested.

Much of the existing commercial forest would benefit if stands were improved by weeding out undesirable species. Continued protection from grazing and wildfire and control of diseases and insects are also needed. The level of forest management has improved significantly during recent years. Uncontrolled burning, which was generally practiced in the area about two decades ago, has given way to fire protection, prescribed burning, or both. Additional forest management measures being practiced or considered include genetically improved seedlings, natural regeneration, and fertilization.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination symbol (woodland suitability) for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *w* indicates excessive water in or on the soil; *c*, clay in the upper part of the soil; *s*, sandy texture; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: w, c, s, and r.

In table 7, *slight, moderate,* and *severe* indicate the

degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in a well-managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that few trees may be blown down by strong winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

Recreation

In table 8, the soils of the survey area are rated according to the limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreational use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have gentle slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes, stones, or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive

foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

Wildlife Habitat

William J. Melven, biologist, Soil Conservation Service, helped prepare this section.

The Kershaw County area has a wide variety of wildlife habitat and a diversity of game and nongame wildlife species. The habitat varies from dry, sandy ridges and upland hardwood sites to the bottom land hardwood swampy stream corridors and pine plantations. Farm ponds, lakes, streams, and adjacent wetlands produce favorable conditions for many fish and for resident and migratory waterfowl.

Wildlife was important to most early settlers in the Kershaw County area because of the food supplied by the wild animals. Hides were used for clothing and as items of trade. Hunting eventually became a sport rather than a necessity for living. The principal wildlife species now include opossum, eastern cottontail, gray squirrel, muskrat, red fox, raccoon, striped skunk, river otter, bobcat, and white-tailed deer. The common game birds include eastern wild turkey, bobwhite quail, American woodcock, and mourning dove. Some other less common but occasionally seen species include swamp rabbit, eastern chipmunk, fox squirrel, gray fox, black bear, mink, and wild hogs. Waterfowl include Canada goose, mallard, black duck, and wood duck.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. Man's activities influence the quantity and quality of habitat by his decisions to alter the vegetative patterns on the landscape. Natural conditions, such as soil characteristics, natural moisture conditions, and topography, also play a role. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair* indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and

legumes are fescue, bahiagrass, and clover.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are ragweed, goldenrod, beggarweed, and partridge pea.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, and blackberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Rem-red honeysuckle, autumn olive, and crabapple.

Coniferous plants furnish browse and seeds. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine and cedar.

Wetland plants are annual and perennial, wild herbaceous plants that grow on moist or wet sites. Submerged and floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, buttonbush, alder, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, and deer.

Habitat for wetland wildlife consists of open, marshy, or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, herons, shore birds, muskrat, mink, beaver, and otter.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil Properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet, and because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations must be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity,

shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to: evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, waste water disposal areas, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer, stone content, soil texture, and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. Depth to a high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, depth to a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, and depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, depth to a high water table, depth to bedrock or to a cemented pan, and the available water capacity in the upper 40 inches affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and

limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 11 also shows the suitability of the soils for use as daily cover for landfills. A rating of *good* indicates that soil properties and site features are favorable for the use and that good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, depth to a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, depth to a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground water pollution. Ease of excavation and revegetation needs to be considered.

The ratings in table 11 are based on soil properties, site features, and observed performance of the soils. Permeability, depth to bedrock or to a cemented pan, depth to a water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, and soil reaction affect trench type landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area type sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to soil blowing.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel or stones, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel or stones, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and releases a variety of plant-available nutrients as it decomposes.

Water Management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas and for embankments, dikes, and levees. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives the restrictive features that affect each soil for drainage, irrigation, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones, boulders, or organic matter. A high water table affects the amount of usable material. It also affects trafficability.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; and subsidence of organic layers. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity in the root zone. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone and the soil reaction.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed

waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 17.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture *(4)*. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system *(2)* and the system adopted by the American Association of State Highway and Transportation Officials *(1)*.

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20, or higher, for the poorest. The AASHTO classification for soils tested, with group index numbers

in parentheses, is given in table 17.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area, or from nearby areas, and on field examination *(3)*.

Physical and Chemical Properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate, or component, consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They influence the soil's adsorption of cations, moisture retention, shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per map unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at ⅓ bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of movement of water through the soil when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage in each major soil layer is stated in inches of water per inch of soil. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The

change is based on the soil fraction less than 2 millimeters in diameter. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion. Losses are expressed in tons per acre per year *(7)*. These estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.02 to 0.69. The higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur over a sustained period without affecting crop productivity. The rate is expressed in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion and the amount of soil lost. Soils are grouped according to the following distinctions:

1. Sands, coarse sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.
2. Loamy sands, loamy fine sands, and loamy very fine sands. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.
3. Sandy loams, coarse sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loamy soils that are less than 35 percent clay and more than 5 percent finely divided calcium carbonate. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.
5. Loamy soils that are less than 18 percent clay and less than 5 percent finely divided calcium carbonate and sandy clay loams and sandy clays that are less than 5 percent finely divided calcium carbonate. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.
6. Loamy soils that are 18 to 35 percent clay and less than 5 percent finely divided calcium carbonate, except silty clay loams. These soils are very slightly erodible. Crops can easily be grown.
7. Silty clay loams that are less than 35 percent clay and less than 5 percent finely divided calcium carbonate. These soils are very slightly erodible. Crops can easily be grown.
8. Stony or gravelly soils and other soils not subject to wind erosion.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These

consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Some of the soils are shown in table 16 with dual hydrologic groups, for example, A/D. This means that under natural conditions the soil is in group D, but by artificial methods the water table can be lowered to the point that the soil fits in group A. Onsite investigation is needed, however, to determine the hydrologic group of the soil at any particular location because there are different degrees of drainage and water table control.

Flooding, the temporary covering of the soil surface by flowing water, is caused by overflowing streams, by runoff from adjacent slopes, or by inflow from high tides. Shallow water standing or flowing for short periods after rainfall or snowmelt is not considered flooding. Standing water in swamps and marshes or in a closed depression is considered ponding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely to occur.

Frequency, duration, and probable dates of occurrence are estimated. Frequency generally is expressed as *none, rare, occasional,* or *frequent. None* means that flooding is not probable. *Rare* means that flooding is unlikely but possible under unusual weather conditions (there is a near 0 to 5 percent chance of flooding in any year). *Occasional* means that flooding occurs infrequently under normal weather conditions (there is a 5 to 50 percent chance of flooding in any year). *Frequent* means that flooding occurs often under normal weather conditions (there is more than a 50 percent chance of flooding in any year). Duration is expressed as *very brief* (less than 2 days), *brief* (2 to 7 days), *long* (7 days to 1 month), and *very long* (more than 1 month). The time of year that floods are most likely to occur is expressed in months. November-May, for example, means that flooding can occur during the period November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information on flooding is based on evidence in the soil profile, namely, thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and absence of distinctive horizons, which are characteristic of soils that are not subject to flooding.

Also considered is local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table, that is, *perched*, or *apparent;* and the months of the year that the water table commonly is highest. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. A *perched* water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

The two numbers in the "High water table—Depth" column indicate the normal range in depth to a saturated zone. Depth is given to the nearest half foot. The first numeral in the range indicates the highest water level. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. "More than 6.0" indicates that the water table is below a depth of 6 feet or that the water table exists for less than a month.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severely corrosive environment. The steel in installations that intersect soil boundaries or soil layers is more

susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and the amount of sulfates in the saturation extract.

Engineering Index Test Data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil Series and Their Morphology." The soil samples were tested by South Carolina Department of Highways and Public Transportation.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories *(6)*. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or on laboratory measurements. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplaquents (*Hapl*, meaning minimal horizonation, plus *aquent*, the suborder of the Entisols that has an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, nonacid, mesic Typic Haplaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. There can be some variation in the texture of the surface layer or of the substratum within a series.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual (4)*. Many of the technical terms used in the descriptions are defined in *Soil Taxonomy (6)*. Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Ailey Series

The Ailey series consists of soils that formed in sandy and loamy marine sediments. These soils are on side slopes and toe slopes of the Coastal Plain. Slopes are 0 to 10 percent. These soils are classified as loamy, siliceous, thermic Arenic Hapludults.

The Ailey soils in the Kershaw County area are taxadjuncts to the Ailey series because of a slightly higher clay content in the brittle, dense layer. Use, management, and behavior of these soils are the same as for other soils in the Ailey series.

Ailey soils are associated on the landscape with Alpin, Blanton, Pelion, Lakeland, Faceville, and Vaucluse soils. Alpin soils have lamellae. Lakeland soils are sandy throughout the profile. Blanton soils have a grossarenic epipedon. Pelion, Faceville, and Vaucluse soils do not have an arenic epipedon.

Typical pedon of Ailey sand, 6 to 10 percent slopes; about 3.8 miles southeast of Elgin, 0.8 mile southwest of the junction of State Highways 12 and 627, about 0.5 mile northeast of the junction of State Highways 12 and 47, about 2,250 feet southwest of the junction of State Highway 12 and Haigs Creek, and 25 feet north of the highway.

A—0 to 9 inches; light brownish gray (10YR 6/2) sand; single grained; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

E1—9 to 26 inches; light yellowish brown (10YR 6/4) sand; single grained; very friable; few fine roots; few round pebbles of quartz; very strongly acid; clear wavy boundary.

E2—26 to 30 inches; very pale brown (10YR 7/4) loamy sand; few medium faint yellow (10YR 7/6) mottles; weak medium subangular blocky structure; very friable; few fine roots; few large concretions of ironstone; few cobblestones of quartz; very strongly acid; clear wavy boundary.

Bt—30 to 38 inches; brownish yellow (10YR 6/6) sandy loam; few medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few fine roots; common fine and few medium pores; many pebbles of quartz; very strongly acid; clear wavy boundary.

Bx1—38 to 52 inches; brownish yellow (10YR 6/8) clay loam; common medium distinct strong brown (7.5YR 5/6) mottles and many large prominent red (2.5YR 5/8) mottles; massive; brittle, dense, and slightly cemented in about 40 percent of the mass, firm in the rest; many horizontal and vertical pale brown (10YR 6/3) and very pale brown (10YR 7/3) streaks of sandy clay loam about 0.25 to 1.50 inches thick; few fine roots; common fine pores; very strongly acid; clear wavy boundary.

Bx2—52 to 72 inches; brownish yellow (10YR 6/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles and few medium distinct red (2.5YR 5/8) mottles; massive; brittle, dense, and slightly cemented in about 50 percent of the mass, firm in the rest; many horizontal and vertical white (10YR 8/1) streaks of gravelly sandy clay about 0.5 to 1 inch thick; few medium light gray balls of kaolin clay; few fine roots along faces between brownish yellow sandy clay loam and streaks of white gravelly sandy clay; few fine pores; common pebbles of quartz; very strongly acid.

The solum is 42 to 60 inches thick. Reaction is very strongly acid or strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 1 to 3.

The E horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. The texture is sand or loamy sand.

The Bt horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8 and has mottles in shades of brown or yellow. The texture is sandy loam or sandy clay loam.

The C horizon has hue of 10YR, value of 5 or 6, and chroma of 4 to 8 and has mottles in shades of gray, brown, yellow, red, or white. The texture is clay loam, sandy clay loam, or sandy loam.

Alpin Series

The Alpin series consists of soils that formed in sandy marine sediment. These soils are on broad ridgetops and accompanying side slopes of the Sand Hills. Slopes are 0 to 15 percent. These soils are classified as thermic, coated Typic Quartzipsamments.

Alpin soils are associated on the landscape with Ailey, Blanton, Lakeland, and Wagram soils. Ailey and Wagram soils have an arenic epipedon. Blanton soils have a grossarenic epipedon. Lakeland soils are sandy throughout and do not have lamellae.

Typical pedon of Alpin sand, 6 to 10 percent slopes; 5.4 miles east of Kershaw, 1.4 miles northeast of the junction of State Highways 341 and 125, about 1.2 miles southwest of the junction of State Highways 125 and 20, about 4,726 feet south of crossing of State Highway 125 over gas line, and 70 feet north of gas line right-of-way.

A—0 to 5 inches; grayish brown (10YR 5/2) sand; single grained; very friable; common fine and medium roots; strongly acid; clear wavy boundary.
E—5 to 14 inches; light yellowish brown (10YR 6/4) sand; common medium distinct grayish brown (10YR 5/2) mottles; single grained; very friable; common fine and few medium roots; strongly acid; gradual wavy boundary.
Bw1—14 to 35 inches; brownish yellow (10YR 6/6) sand; single grained; very friable; few fine roots; very strongly acid; clear wavy boundary.
Bw2—35 to 53 inches; yellow (10YR 7/6) sand; single grained; loose; very strongly acid; abrupt wavy boundary.
Bw3—53 to 63 inches; yellow (10YR 7/6) sand; single grained; loose; common strong brown (7.5YR 5/6) loamy sand lamellae, 1/16 to 1/8 inch thick, about 3 to 4 inches apart and 3 inches to 3 feet in length; few fine roots; very strongly acid; clear smooth boundary.
E and Bt—63 to 85 inches; white (10YR 8/2) sand; single grained; loose; common strong brown (7.5YR 5/6) loamy sand lamellae, 1/4 to 3/4 inch thick, about 2 to 5 inches apart and extending throughout the horizon; lamellae are single grained and friable; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to slightly acid.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. The texture is sand or fine sand.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 5. The texture is sand or fine sand.

The Bw horizon has hue of 10YR, value of 5 to 8, and chroma of 1 to 8. The texture is sand or fine sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 or 8. The texture is loamy sand. The Bt horizon is in bands, 1/16 to 1 1/2 inches thick, separated by layers of E material, 2 to 5 inches thick. The bands are 1 to 6 inches thick between depths of 30 and 80 inches (fig. 6).

Altavista Series

The Altavista series consists of soils that formed in alluvial sediment. These soils are on stream terraces of the Piedmont and on terraces of the Wateree, Little Lynches, and Lynches Rivers on the Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as fine-loamy, mixed, thermic Aquic Hapludults.

Altavista soils are associated on the landscape with Chewacla, Congaree, Summerton, Toccoa, and Wickham soils. Chewacla, Congaree, and Toccoa soils do not have an argillic horizon. Summerton and Wickham soils do not have gray mottles within 30 inches of the surface. In addition, Summerton soils have a clayey particle-size control section.

Typical pedon of Altavista loam, 0 to 2 percent slopes; 6.4 miles southwest of Camden, 2.8 miles southeast of the interchange of Interstate 20 with U.S. Highway 601, about 1.2 miles east of the junction of the unpaved road leading east with U.S. Highway 601, about 350 feet east of Gillies Ditch, and 30 feet south of the unpaved road leading east.

A—0 to 6 inches; brown (10YR 5/3) loam; weak medium granular structure; friable; common fine and medium roots and few large roots; few fine flakes of mica; strongly acid; clear smooth boundary.
Bt1—6 to 17 inches; brownish yellow (10YR 6/6) sandy clay loam; weak medium subangular blocky structure; friable; many fine flakes of mica; few faint clay films on faces of peds; common fine and medium roots; strongly acid; gradual smooth boundary.
Bt2—17 to 39 inches; yellowish brown (10YR 5/4) loam; common medium distinct light gray (10YR 7/2) and strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; many fine flakes of mica; many fine and medium pores; few faint clay films on faces of peds and in pores; strongly acid; gradual smooth boundary.
BC—39 to 46 inches; yellowish brown (10YR 5/6) sandy loam; common fine faint strong brown (7.5YR 5/6) mottles and common medium distinct light gray (10YR 7/2) mottles; weak medium subangular blocky structure; friable; common fine flakes of mica; few clay pockets, 1 to 2 inches in diameter; strongly acid; clear smooth boundary.
C—46 to 60 inches; yellowish brown (10YR 5/6) loam; many medium distinct light gray (10YR 6/1) mottles; massive; friable; common fine flakes of mica; common pockets and strata of clay; strongly acid.

The solum is 42 to 54 inches thick. Reaction is very strongly acid to medium acid except where lime has been added to the soil.

The A horizon has hue of 7.5YR to 10YR, value of 4 or 5, and chroma of 2 to 4.

The Bt horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma 4 to 8 and has few to many mottles in shades of gray, yellow, red, or brown. The texture is loam, clay loam, or sandy clay loam.

The C horizon has hue of 10YR, value of 5 or 6, and

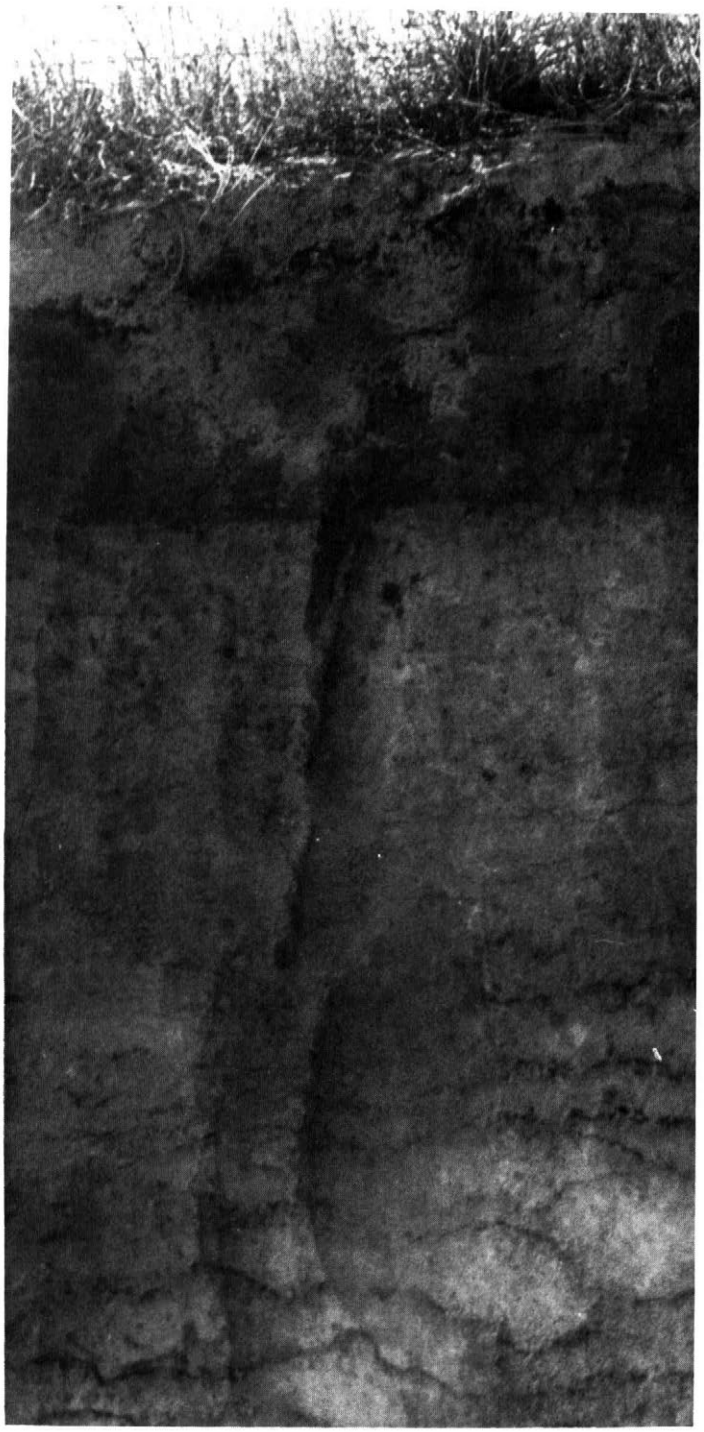


Figure 6.—Alpin soils have lamellae of loamy sand in the lower part of the subsoil.

chroma of 4 to 8 or is mottled in shades of yellow, brown, or gray. The texture is sandy loam, loam, or sandy clay loam.

Blanton Series

The Blanton series consists of soils that formed in sandy and loamy marine sediment. These soils are on broad, irregularly shaped ridges of the Coastal Plain. Slopes are 0 to 10 percent. These soils are classified as loamy, siliceous, thermic Grossarenic Paleudults.

Blanton soils are associated on the landscape with Ailey, Alpin, Pelion, Lakeland, Wagram, and Vaucluse soils. Ailey, Pelion, Wagram, and Vaucluse soils do not have a grossarenic epipedon. In addition, Ailey and Vaucluse soils have a dense, brittle layer. Alpin and Lakeland soils do not have an argillic horizon.

Typical pedon of Blanton sand, 0 to 6 percent slopes; 4.7 miles southeast of Kershaw, 2.2 miles south of the junction of State Highways 41 and 341, about 1,650 feet southeast of the junction of State Highways 41 and 374, and 50 feet west of State Highway 41.

A—0 to 4 inches; gray (10YR 5/1) sand; single grained; loose; common fine and few medium and large roots; strongly acid; clear smooth boundary.

E1—4 to 23 inches; pale brown (10YR 6/3) sand; single grained; loose; 50 percent of sand grains uncoated; common fine and few medium roots; strongly acid; clear wavy boundary.

E2—23 to 62 inches; yellow (10YR 7/6) sand; single grained; loose; 40 percent of sand grains uncoated, strongly acid; gradual wavy boundary.

BE—62 to 67 inches; yellowish brown (10YR 6/6) loamy sand; common medium distinct strong brown (7.5YR 5/6) mottles and few medium faint pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; strongly acid; clear wavy boundary.

Bt—67 to 80 inches; light yellowish brown (10YR 6/4) sandy loam; many medium distinct strong brown (7.5YR 5/6) and light gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds and in pores; few very fine pores; strongly acid.

The solum is more than 80 inches thick. Reaction is medium acid to very strongly acid in the A horizon except where lime has been added to the soil. It is strongly acid or very strongly acid in the B horizon.

The A horizon has hue of 10YR, value of 3 to 6, and chroma of 1 to 3.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6. Some pedons have mottles in shades of brown. The texture is sand or loamy sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 3 to 8. The texture is sandy loam

or sandy clay loam. Most pedons have few to common mottles in shades of gray, brown, red, or yellow.

Cantey Series

The Cantey series consists of soils that formed in clayey sediment on old marine terraces. These soils are in low areas of the Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as clayey, kaolinitic, thermic Typic Albaquults.

Cantey soils are associated on the landscape with Goldsboro, Johnston, Congaree, Persanti, and Chewacla soils. Goldsboro, Congaree, and Chewacla soils have a fine-loamy particle-size control section. Johnston soils have a cumulic epipedon. Persanti soils are udults.

Typical pedon of Cantey loam; from the intersection of Interstate 20 and U.S. Highway 601 southwest of Camden, 3.2 miles south on U.S. Highway 601, about 1.3 miles east on a farm road, and 50 feet south of farm road.

A—0 to 3 inches; brown (10YR 4/3) loam; weak medium subangular blocky structure; friable; few medium and large roots; strongly acid; abrupt smooth boundary.

Btg1—3 to 43 inches; gray (10YR 5/1) clay; common medium distinct reddish yellow (7.5YR 6/8) mottles; strong medium subangular blocky structure; firm; common distinct clay films on faces of peds; few fine roots; very strongly acid; clear wavy boundary.

Btg2—43 to 60 inches; gray (10YR 6/1) clay; common medium distinct yellowish brown (10YR 5/8) mottles; strong medium subangular blocky structure; firm; common distinct clay films on faces of peds; very strongly acid.

The solum is more than 60 inches thick. Reaction is extremely acid to strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 3.

The Btg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. The texture is clay.

Cartecay Series

The Cartecay series consists of soils that formed in alluvial sediment. These soils are on flood plains of the Piedmont. Slopes are less than 2 percent. These soils are classified as coarse-loamy, mixed, nonacid, thermic Aquic Udifluvents.

Cartecay soils are associated on the landscape with Chewacla, Congaree, Toccoa, and Wehadkee soils. Chewacla soils have a fine-loamy particle-size control section. Toccoa and Congaree soils are better drained. Wehadkee soils are more poorly drained and have a fine-loamy particle-size control section.

Typical pedon of Cartecay silt loam, in an area of Toccoa-Cartecay complex; 6.6 miles west of Kershaw, 2.3 miles southwest of the junction of State Highways 121 and 58, about 4,500 feet southeast of Rock Hill Cemetery, 160 feet south of southeastern corner of State Highway 121 bridge over tributary of Beaver Creek, and 50 feet east of stream channel.

A—0 to 9 inches; dark yellowish brown (10YR 4/4) silt loam; massive; slightly sticky; many fine and medium and few large roots; few fine flakes of mica; strongly acid; clear wavy boundary.

C1—9 to 16 inches, yellowish red (5YR 5/6) sandy loam; few fine faint gray mottles on faces of peds; massive; friable; pockets of brown (10YR 4/3) loam; common fine and very fine pores; common fine and medium and few large roots; fine flakes of mica; strongly acid; clear wavy boundary.

C2—16 to 30 inches; grayish brown (10YR 5/2) loam; many coarse prominent strong brown (7.5YR 5/6) mottles; massive; slightly sticky; common fine and medium roots; many fine flakes of mica; strongly acid; clear wavy boundary.

C3—30 to 42 inches; mottled brownish yellow (10YR 6/6) and strong brown (7.5YR 5/6) sandy loam; common thin strata, ⅛ to 1 inch thick, of mottled strong brown (7.5YR 5/6), gray (10YR 5/1), and brown (10YR 5/3) loam; massive; friable; common fine and medium roots; many fine flakes of mica; strongly acid; clear wavy boundary.

C4—42 to 53 inches; grayish brown (10YR 5/2) loam; many medium distinct reddish brown (5YR 4/4) and strong brown (7.5YR 5/6) mottles; massive; friable; common fine roots; many fine flakes of mica; strongly acid; clear wavy boundary.

C5—53 to 60 inches; reddish brown (5YR 4/4) sandy loam; many coarse prominent light gray (10YR 7/2) mottles; massive; friable; common grains of clean quartz sand; about 5 percent fine pebbles of quartz and feldspar; strongly acid.

Reaction is strongly acid to slightly acid. All pedons have at least one subhorizon that is medium acid or slightly acid. Flakes of mica range from few to many throughout most of the profile.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4. The texture is loam, silt loam, or sandy loam.

The upper part of the C horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 3 to 6. The lower part has hue of 5YR to 10YR, value of 4 to 7, and chroma of 2 to 7. The texture is sandy loam with strata of sand, loamy sand, loam, sandy clay loam, or clay loam.

Cecil Series

The Cecil series consists of soils that formed in granite residuum. These soils are on medium to broad ridgetops and side slopes of the Piedmont. Slopes are 2 to 10 percent. These soils are classified as clayey, kaolinitic, thermic Typic Hapludults.

Cecil soils are associated on the landscape with Durham, Helena, Madison, and Pacolet soils. Durham soils have a fine-loamy particle-size control section. Madison soils have a high content of mica in the subsoil. Helena soils are Aquic Hapludults and have mixed mineralogy. Pacolet soils have a clayey argillic horizon less than 24 inches thick.

Typical pedon of Cecil sandy loam, 2 to 6 percent slopes; 15.8 miles northwest of Camden, 3.4 miles northeast of the junction of State Highways 57 and 97, 2.7 miles southwest of the junction of State Highways 13 and 597, about 400 feet east of road sign warning of curve in road, and 75 feet north of State Highway 13.

A—0 to 6 inches; reddish brown (5YR 4/3) sandy loam; weak fine granular structure; friable; many fine, common medium, and few large roots; about 2 percent quartz pebbles, 2 to 5 millimeters in diameter; strongly acid; clear smooth boundary.

EB—6 to 11 inches; reddish brown (5YR 5/4) sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; few fine flakes of mica; about 5 percent feldspar and quartz pebbles, 2 to 10 millimeters in diameter; strongly acid; clear smooth boundary.

Bt1—11 to 26 inches; red (2.5YR 5/6) clay loam; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—26 to 44 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; few fine flakes of mica; strongly acid; gradual wavy boundary.

Bt3—44 to 65 inches; red (2.5YR 4/8) clay; common medium distinct reddish yellow (7.5YR 7/8) mottles and few fine distinct dark red (2.5YR 3/6) mottles; weak medium subangular blocky structure; friable; few fine flakes of mica; few feldspar pebbles, 2 to 5 millimeters in diameter; very strongly acid.

The solum is 52 to 60 inches or more thick. Reaction is very strongly acid or strongly acid.

The A horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 2 to 6.

The Bt horizon has hue of 10R to 2.5YR, value of 4 or 5, and chroma of 6 or 8. The texture is clay or clay loam. The lower part of this horizon commonly has mottles in shades of brown, yellow, or red.

Chewacla Series

The Chewacla series consists of soils that formed in alluvial sediment. These soils are on flood plains of the Piedmont and Coastal Plain. Slopes are less than 1 percent. These soils are classified as fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts.

Chewacla soils are associated on the landscape with Congaree, Toccoa, Pantego, Johnston, Dorovan, and Wehadkee soils. Congaree and Toccoa soils do not have chroma of 2 or less within a depth of 20 inches. In addition, Toccoa soils have a coarse-loamy particle-size control section. Pantego soils have an argillic horizon and an umbric epipedon. Johnston soils have a cumulic epipedon. Dorovan soils are organic. Wehadkee soils have a gray B horizon.

Typical pedon of Chewacla loam; about 6.2 miles northwest of Bethune, 1.7 miles south of the junction of State Highways 87 and 42, about 225 feet southeast of State Highway 42 bridge over Little Lynches River, and 150 feet south of the river.

A—0 to 8 inches; brown (10YR 4/3) loam; weak fine granular structure; friable; many fine and medium and few large roots; common fine flakes of mica; very strongly acid; clear smooth boundary.

Bw1—8 to 15 inches; brown (10YR 5/3) loam; common medium faint grayish brown (10YR 5/2) mottles, common fine distinct strong brown (7.5YR 5/6) mottles, and few fine faint grayish brown mottles; weak fine granular structure; friable; common fine and medium and few large roots; few fine flakes of mica; very strongly acid; clear smooth boundary.

Bw2—15 to 30 inches; light yellowish brown (10YR 6/4) loam; common medium distinct light gray (10YR 7/2) and brownish yellow (10YR 6/6) mottles and few fine distinct reddish yellow (5YR 6/6) mottles; weak medium subangular blocky structure; friable; few fine and medium roots; few fine fragments of black organic matter; few fine flakes of mica; many fine and very fine pores; very strongly acid; gradual smooth boundary.

Bg—30 to 54 inches; light gray (10YR 7/2) loam; many

medium faint light brownish gray (10YR 6/2) mottles and many medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine fragments of black organic matter; few fine flakes of mica; common fine and very fine pores; very strongly acid; gradual wavy boundary.

C—54 to 70 inches; yellowish brown (10YR 5/6) sandy loam; many medium distinct light gray (10YR 7/2) mottles; massive; very friable; common fine flakes of mica; common thin strata of sandy clay loam and sand; very strongly acid.

The solum is 46 to 70 inches or more thick. Reaction is very strongly acid to slightly acid. Content of fine mica flakes ranges from few to many.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 to 4.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 3 to 6, and chroma of 3 to 6 and has few to common mottles in shades of gray, brown, yellow, or red. The lower part has hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 1 to 6 and has common to many mottles in shades of gray, red, yellow, or brown. The texture of the B horizon is loam, silt loam, or silty clay loam. In some pedons, thin strata of sandy clay loam are in the lower part of the B horizon.

The C horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 6 and has mottles in various shades of brown. The texture is fine sandy loam, sandy loam, loam, sandy clay loam, or clay loam.

Congaree Series

The Congaree series consists of soils that formed in loamy alluvial sediment. These soils are on broad flood plains of the Piedmont and Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as fine-loamy, mixed, nonacid, thermic Typic Udifluvents.

Congaree soils are associated on the landscape with Chewacla, Toccoa, and Wehadkee soils. Chewacla and Wehadkee soils have gray colors above a depth of 20 inches. Toccoa soils have a coarse-loamy particle-size control section.

Typical pedon of Congaree loam; on Wateree Farms 3.2 miles southwest of Camden, 3 miles east of the junction of State Highway 133 and U.S. Highway 601, about 4,800 feet southwest of crossover of Interstate 20 over Wateree River, 3,400 feet southeast of crossover of Interstate 20 over field road, 125 feet west of field road, and 165 feet south of shed.

Ap—0 to 10 inches; brown (7.5YR 4/2) loam; weak medium granular structure; friable; many fine and medium roots; common fine flakes of mica; slightly acid; clear smooth boundary.

C1—10 to 25 inches; brown (7.5YR 4/4) loam; massive; friable; common fine roots; common fine pores; few wormcasts; few distinct brown (10YR 4/2) clay films along faces of pores and cracks; common fine flakes of mica; medium acid; gradual wavy boundary.

C2—25 to 37 inches; strong brown (7.5YR 5/6) loam; massive; friable; common fine roots; common fine pores; few distinct brown (10YR 4/2) clay films along faces of pores and cracks; many fine and common medium flakes of mica; strongly acid; gradual wavy boundary.

C3—37 to 70 inches; mottled light gray (10YR 7/1) and brownish yellow (10YR 6/6) loam; many medium distinct dark brown (7.5YR 4/4) mottles; massive; friable; few fine roots; many fine pores; few fine flakes of mica; strongly acid.

Reaction generally is very strongly acid to neutral, but it is medium acid to neutral in some part of the profile between depths of 10 and 40 inches. Few to many flakes of mica are throughout the pedon. Some pedons have a buried A horizon.

The A horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 2 to 4.

The C horizon has hue of 5YR to 10YR, value of 3 to 7, and chroma of 3 to 6 in the upper part and 1 to 4 in the lower part. The texture generally is loam, fine sandy loam, sandy clay loam, or silty clay loam, but some pedons have thin strata of loamy sand or silty clay.

Dorovan Series

The Dorovan series consists of soils that formed in partly decomposed organic material. These soils are on flood plains of the Coastal Plain and the Sand Hills. Slopes are less than 1 percent. These soils are classified as dysic, thermic Typic Medisaprists.

Dorovan soils are associated on the landscape with Johnston, Pantego, and Wehadkee soils, which are mineral soils.

Typical pedon of Dorovan muck; 3.8 miles southeast of Elgin, 1.3 miles southwest of the junction of State Highways 47 and 12, about 1.4 miles southeast of the junction of State Highways 102 and 12, about 5,300 feet southeast of the junction of State Highway 12 and a county road, and 350 feet east of the county road, along a tributary of Spears Creek.

Oe—0 to 2 inches; very dark brown (10YR 2/2) hemic

material consisting of roots, moss, leaves, and twigs in all stages of decomposition; about 50 percent fiber unrubbed, 25 percent rubbed; nonsticky; extremely acid; clear wavy boundary.

Oa1—2 to 16 inches; black (10YR 2/1) sapric material; about 15 percent fibers, less than 5 percent rubbed; massive; nonsticky; many fine, medium, and large roots; common partly decomposed stumps, logs, and roots; extremely acid; gradual wavy boundary.

Oa2—16 to 66 inches; black (10YR 2/1) sapric material; about 10 percent fibers, less than 2 percent rubbed; massive; nonsticky; few fine, medium, and large roots; few partly decomposed wood fragments; extremely acid; gradual wavy boundary.

2Cg—66 to 80 inches; gray (10YR 4/1) sand; single grained; loose; many uncoated grains of white quartz sand; few fine flakes of mica; very strongly acid.

The organic material is more than 54 inches thick. Reaction is extremely acid in the O horizon and very strongly acid or strongly acid in the C horizon.

The Oe horizon has hue of 10YR, value of 2, and chroma of 1 or 2 and is hemic material that is 40 to 70 percent fibers, unrubbed. The Oa horizon has hue of 10YR, value of 2, and chroma of 1, or it is neutral and has value of 2. This horizon is sapric material that is 10 to 25 percent fibers, unrubbed.

The C horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. The texture is sand, loamy sand, sandy loam, or loam.

Durham Series

The Durham series consists of soils that formed in granite residuum. These soils are on medium to broad ridgetops and side slopes of the Piedmont. Slopes are 2 to 10 percent. These soils are classified as fine-loamy, siliceous, thermic Typic Hapludults.

Durham soils are associated on the landscape with Cecil, Helena, Madison, and Pacolet soils, which have a clayey particle-size control section. In addition, Cecil, Madison, and Pacolet soils have hue redder than 5YR in the subsoil, and Helena soils are Aquic Hapludults and have mixed mineralogy.

Typical pedon of Durham loamy sand, 2 to 6 percent slopes; 21 miles northwest of Camden, 4.1 miles northeast of the junction of State Highways 97 and 522, about 950 feet northwest of the junction of State Highways 522 and 379, about 195 feet west of State Highway 379, and 230 feet southwest of light pole.

Ap—0 to 7 inches; grayish brown (10YR 5/2) loamy sand; single grained; very friable; many fine roots; about 3 percent fine irregularly shaped quartz pebbles, 2 to 5 millimeters in diameter; very strongly acid; abrupt smooth boundary.

BA—7 to 12 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine subangular blocky structure; few fine roots; about 1 percent fine irregularly shaped quartz pebbles, 2 to 5 millimeters in diameter; very strongly acid; clear wavy boundary.

Bt1—12 to 36 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; about 2 percent fine irregularly shaped quartz pebbles, 2 to 5 millimeters in diameter; very strongly acid; gradual wavy boundary.

Bt2—36 to 55 inches; strong brown (7.5YR 5/8) sandy clay loam; few medium distinct pale brown (10YR 6/3) and yellowish red (5YR 4/8) mottles; moderate medium subangular blocky structure; slightly sticky; few faint clay films on faces of peds; about 2 percent fine irregularly shaped quartz pebbles, 2 to 5 millimeters in diameter; very strongly acid; gradual wavy boundary.

BC—55 to 65 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/8) mottles and few fine distinct pale brown (10YR 6/3) and yellow (10YR 7/6) mottles; weak medium subangular blocky structure; friable; about 4 percent fine irregularly shaped quartz pebbles, 2 to 5 millimeters in diameter; common balls of clay, 0.5 to 2 inches in diameter; very strongly acid.

The solum is 44 to 60 inches or more thick. Reaction is very strongly acid or strongly acid except where lime has been added to the soil.

The A horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 2 or 3.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 or 8 and has mottles in shades of red, brown, or yellow in the lower part. The texture is sandy clay loam in the upper part of the horizon and sandy clay loam or sandy clay in the lower part.

Faceville Series

The Faceville series consists of soils that formed in marine and alluvial sediments. These soils are on broad interstream divides of the Coastal Plain. Slopes are 0 to 6 percent. These soils are classified as clayey, kaolinitic, thermic Typic Paleudults.

Faceville soils are associated on the landscape with

Grady, Goldsboro, Norfolk, Rains, and Wagram soils. Grady and Rains soils are aquults. Norfolk soils have a fine-loamy particle-size control section. Wagram soils have an arenic epipedon. Goldsboro soils are Aquic Paleudults.

Typical pedon of Faceville loamy sand, 0 to 2 percent slopes; 4.2 miles southwest of Camden, 2,075 feet northeast of the junction of U.S. Highway 1 and State Highway 34, and 170 feet northwest of the back door of Garrett's in Wateree Plaza Shopping Center in Lugoff.

Ap—0 to 7 inches; grayish brown (10YR 5/2) loamy sand; common medium distinct pale brown (10YR 6/3) mottles; single grained; very friable; common fine roots; medium acid; clear smooth boundary.

BA—7 to 10 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; common fine roots; strongly acid; clear smooth boundary.

Bt1—10 to 33 inches; yellowish red (5YR 5/8) sandy clay; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

Bt2—33 to 51 inches; red (2.5YR 4/8) sandy clay; few medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; friable; few clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—51 to 65 inches; red (2.5YR 4/8) sandy clay; common medium distinct light yellowish brown (10YR 6/4) mottles and few medium distinct dark red (2.5YR 3/6) mottles; weak medium subangular blocky structure; friable; few clay films on faces of peds; strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid except where lime has been added.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. The texture commonly is loamy sand, but it ranges to sandy loam.

The Bt horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8. The texture is sandy clay or clay. Most pedons have few to common mottles in shades of red, yellow, or brown in the lower part of this horizon.

Georgeville Series

The Georgeville series consists of soils that formed in residuum from Carolina slates. These soils are on ridges and side slopes adjacent to drainageways in the southern part of the Piedmont. Slopes are 2 to 10 percent. These soils are classified as clayey, kaolinitic, thermic Typic Hapludults.

Georgeville soils are associated on the landscape with Durham, Cecil, Herndon, Nason, and Pacolet soils. All of these soils except Georgeville and Nason soils have less than 30 percent silt in the Bt horizon. Herndon and Nason soils have hue of 5YR to 10YR, and Nason soils have mixed mineralogy. Pacolet soils have a clayey argillic horizon that is less than 24 inches thick. Along the border between the Piedmont and Sand Hills, Georgeville soils are associated on the landscape with Ailey, Blanton, Norfolk, Vaucluse, and Wagram soils, which have a loamy particle-size control section. Ailey and Vaucluse soils have a dense brittle layer in the subsoil. Ailey, Blanton, and Wagram soils have an arenic or a grossarenic epipedon.

Typical pedon of Georgeville loam, 2 to 6 percent slopes; 12.5 miles west of Camden, 0.8 mile southwest of the junction of South Carolina Highways 21 and 622, midway between light poles 8D-53 and 8D-54, and 35 feet west of South Carolina Highway 622.

A—0 to 5 inches; reddish brown (5YR 4/3) loam; weak fine granular structure; friable; many fine and few medium and large roots; about 4 percent fine and medium quartz pebbles; very strongly acid; abrupt wavy boundary.

Bt1—5 to 26 inches; red (2.5YR 4/6) clay; moderate medium subangular blocky structure; firm, slightly sticky; few distinct clay films on faces of peds; common fine and few medium and large roots; many fine pores; very strongly acid; gradual wavy boundary.

Bt2—26 to 35 inches; red (2.5YR 4/6) silty clay; common medium distinct reddish yellow (5YR 7/8) mottles; moderate medium subangular blocky structure; firm, slightly sticky; few distinct clay films on faces of peds; few fine roots; common very fine pores; strongly acid; clear wavy boundary.

BC1—35 to 43 inches; mottled red (2.5YR 4/6) and reddish yellow (5YR 7/8) silty clay loam; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; many very fine pores; very strongly acid; gradual wavy boundary.

BC2—43 to 58 inches; mottled red (2.5YR 4/6) and reddish yellow (7.5YR 6/6) silty clay loam; weak medium subangular blocky structure; friable; very strongly acid; gradual wavy boundary.

C—58 to 70 inches; reddish yellow (7.5YR 6/6) silty clay loam; massive; friable; many medium distinct red (2.5YR 4/6) mottles; very strongly acid.

The solum is 45 to 70 inches thick. Reaction is very strongly acid or strongly acid except where lime has been added to the soil.

The A horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 6. The texture commonly is loam but includes silt loam or fine sandy loam.

The Bt horizon has hue of 10R to 2.5YR, value of 4 or 5, and chroma of 6 or 8. The texture commonly is silty clay, clay, or clay loam, but some pedons have a subhorizon of silty clay loam. In most pedons, the lower part of the Bt horizon has few to common reddish yellow and yellowish red mottles.

The C horizon is shades of yellow, brown, and red or is mottled in these colors. The texture is loam or silt loam. Slate fragments range from few to many.

Goldsboro Series

The Goldsboro series consists of soils that formed in loamy marine and alluvial sediments. These soils are in smooth and slightly depressional areas of the Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as fine-loamy, siliceous, thermic Aquic Paleudults.

Goldsboro soils are associated on the landscape with Cantey, Persanti, Norfolk, and Rains soils. Cantey and Persanti soils have a clayey particle-size control section. Cantey and Rains soils are aquults, and Norfolk soils are Typic Paleudults.

Typical pedon of Goldsboro loamy sand, 0 to 2 percent slopes; about 8.2 miles southeast of Camden, 0.6 mile northwest of the junction of U.S. Highway 521 and State Highway 23, about 6,400 feet east of main spillway of Boykins Mill Pond dam, 800 feet southwest of the junction of U.S. Highway 521 and a field road leading southwest, 150 feet south of field road, and 180 feet east of ditch.

Ap—0 to 10 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; many fine and few medium roots; many fine pores; slightly acid; abrupt smooth boundary.

E—10 to 12 inches; light yellowish brown (10YR 6/4) sandy loam; weak fine granular structure; very friable; common fine roots; many fine pores; slightly acid; abrupt smooth boundary.

Bt1—12 to 24 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium subangular blocky structure; friable; few faint clay films on faces of peds; common fine roots; common very fine and fine pores; very strongly acid; clear smooth boundary.

Bt2—24 to 39 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct pale brown (10YR 6/3) and light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few fine roots; common very fine and fine pores; very strongly acid; gradual smooth boundary.

Bt3—39 to 48 inches; mottled light gray (10YR 7/2) and yellowish brown (10YR 5/8) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles and few fine distinct red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few fine roots; few fine pores; very strongly acid; gradual smooth boundary.

Btg—48 to 65 inches; light gray (10YR 7/2) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles and few medium distinct red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; very strongly acid.

The solum is 60 to 75 inches or more thick. Reaction is very strongly acid or strongly acid throughout except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 to 6. The texture is sandy loam or loamy sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 to 8. It has few to common mottles with chroma of 2 or less below a depth of 30 inches. The texture generally is sandy clay loam, but in places it is sandy clay below a depth of 40 inches.

Grady Series

The Grady series consists of soils that formed in clayey marine sediment. These soils are in nearly level areas and slight depressions of the Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as clayey, kaolinitic, thermic Typic Paleaquults.

Grady soils are associated on the landscape with Persanti, Rains, Pantego, and Goldsboro soils. Persanti soils are Aquic Paleudults. Rains, Pantego, and Goldsboro soils have a fine-loamy particle-size control section.

Typical pedon of Grady loam; about 3 miles south of Camden on U.S. Highway 521, about 0.25 mile east on Black River Road, 0.25 mile southeast on dirt road, and 250 feet east of dirt road.

A1—0 to 3 inches; very dark gray (10YR 3/1) loam; weak medium subangular blocky structure; very friable; few fine and medium roots; strongly acid; gradual wavy boundary.
Btg1—3 to 10 inches; light brownish gray (10YR 6/2) clay loam; common medium distinct reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.
Btg2—10 to 30 inches; gray (10YR 6/1) clay; few faint distinct reddish yellow (5YR 6/8) and red (2.5YR 4/8) mottles; strong medium subangular blocky structure; very firm; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.
Btg3—30 to 50 inches; gray (10YR 6/1) clay; few fine distinct yellow (10YR 7/8) and reddish yellow (5YR 6/8) mottles; strong medium subangular blocky structure; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.
Btg4—50 to 60 inches; grayish brown (10YR 5/2) clay; few fine faint yellow (10YR 7/8) mottles; very firm; common faint clay films on faces of peds; strongly acid.

The solum is more than 60 inches thick. Reaction is extremely acid to strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 or 2. The texture generally is sandy loam.

The Btg horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2 and has mottles in shades of red, brown, or yellow. The texture is clay.

Greenville Series

The Greenville series consists of soils that formed in alluvial sediment. These soils are on medium to broad ridgetops and side slopes of the Piedmont. Slopes are 2 to 10 percent. These soils are classified as clayey, kaolinitic, thermic Rhodic Paleudults.

The Greenville soils in the Kershaw County area are taxadjuncts to the Greenville series because of the slightly higher silt content and the setting in the Piedmont. Use, management, and behavior of these soils are the same as for other Greenville soils.

Greenville soils are associated on the landscape with Georgeville, Lugoff, Nason, Wickham, and Winnsboro soils, which do not have the dark red colors of the Greenville soils. Lugoff soils have many rounded quartz pebbles throughout the upper part of the profile. Wickham soils have a fine-loamy particle-size control section, and Winnsboro soils have mixed mineralogy.

Typical pedon of Greenville sandy loam, 2 to 6 percent slopes; 11.8 miles north west of Camden, 7.8 miles north of the junction of State Highways 5 and 37, about 4.8 miles northwest of the junction of State Highways 37 and 620, about 140 feet west of light pole No. 130A, and 30 feet west of State Highway 620.

A—0 to 5 inches; dark brown (7.5YR 3/2) sandy loam; weak fine granular structure; very friable; about 3 percent rounded quartz pebbles, 0.5 to 2.5 inches in diameter, many fine and common medium and large roots; slightly acid; clear smooth boundary.
Bt1—5 to 16 inches; dark red (2.5YR 3/6) clay; moderate medium subangular blocky structure; slightly sticky; common fine and medium and few large roots; about 1 percent rounded quartz pebbles, 0.5 to 2.5 inches in diameter; medium acid; clear smooth boundary.
Bt2—16 to 53 inches; dark red (10R 3/6) clay; strong medium angular blocky structure; slightly sticky; few fine roots; common distinct clay films on faces of peds; about 1 percent rounded quartz pebbles, 0.5 to 2.5 inches in diameter; medium acid; gradual wavy boundary.
BC—53 to 65 inches; dark red (2.5YR 3/6) silty clay; common medium distinct reddish yellow (7/5YR 6/6) mottles; weak medium subangular blocky structure; friable; strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to medium acid except where lime has been added to the soil.

The A horizon has hue of 5YR or 7.5YR, value of 3 or 4, and chroma of 2 to 4. The texture generally is sandy loam, but it ranges to loam.

The Bt horizon has hue of 10R or 2.5YR, value of 2 or 3, and chroma of 6. The texture is clay or clay loam.

Helena Series

The Helena series consists of clayey soils that formed in granite residuum. These soils are on toe slopes of the Piedmont. Slopes are 2 to 6 percent. These soils are classified as clayey, mixed, thermic Aquic Hapludults.

Helena soils are associated on the landscape with Cartecay, Cecil, Madison, and Toccoa soils. Cecil and Madison soils are in higher positions on the landscape than Helena soils, are well drained, and have kaolinitic mineralogy. Cartecay and Toccoa soils are on flood plains and have a coarse-loamy particle-size control section.

Typical pedon of Helena sandy loam, 2 to 6 percent slopes; 14.3 miles northwest of Camden, 0.9 mile northeast of the junction of State Highways 97 and 57, 1,750 feet southwest of the junction of State Highways 56 and 57, about 15 feet east of an unnumbered light pole, and 20 feet north of State Highway 57.

A—0 to 4 inches; dark grayish brown (10YR 4/2) sandy loam; moderate medium granular structure; friable; many fine and medium and few large roots; very strongly acid; clear smooth boundary.

E—4 to 7 inches; brown (10YR 5/3) loamy sand; moderate medium granular structure; friable; common fine and few medium roots; very strongly acid; clear smooth boundary.

BE—7 to 13 inches; light yellowish brown (10YR 6/4) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; very strongly acid; clear wavy boundary.

Bt1—13 to 19 inches; brownish yellow (10YR 6/5) sandy clay loam; common fine distinct light gray (10YR 7/2) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine flakes of mica; about 1 percent quartz pebbles, 2 to 5 millimeters in diameter; very strongly acid; clear smooth boundary.

Bt2—19 to 34 inches; light gray (10YR 7/2) clay; many coarse distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; few fine roots; about 1 percent quartz and feldspar pebbles, 2 to 5 millimeters in diameter; very strongly acid; gradual wavy boundary.

Btg—34 to 46 inches; gray (10YR 7/2) clay; few fine distinct yellow (10YR 7/6) mottles; moderate medium subangular blocky structure; firm; about 1 percent quartz and feldspar pebbles, 2 to 5 millimeters in diameter; very strongly acid; clear wavy boundary.

Cg—46 to 65 inches; gray (10YR 6/1) sandy clay loam; few fine faint very pale brown mottles; massive; firm; common strata and balls of clay; very strongly acid.

The solum is 42 to 60 inches or more thick. Reaction is very strongly acid or strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 to 3.

The E horizon has hue of 10YR, value of 5 or 6, and chroma of 3 or 4. The texture is loamy sand or sandy loam.

The upper part of the Bt horizon has hue of 7.5YR to 10YR, value of 5 or 6, and chroma of 6 or 8 and has few to common mottles of chroma 2 or less within a depth of 24 inches. The lower part of the Bt horizon has colors similar to those of the upper part and has common to many mottles with chroma of 2 or less, or it has hue of 10YR, value of 6 or 7, and chroma of 2 and has common to many mottles in shades of yellow or brown. The texture of the Bt horizon is clay with thin layers of sandy clay loam.

The C horizon is gray or is mottled in shades of gray, yellow, or brown. The texture is sandy clay loam or sandy loam.

Herndon Series

The Herndon series consists of soils that formed in residuum from Carolina slates. These soils are on broad, irregularly shaped ridges and medium to narrow side slopes adjacent to drainageways in the southern part of the Piedmont. Slopes are 2 to 10 percent. These soils are classified as clayey, kaolinitic, thermic Typic Hapludults.

Herndon soils are associated on the landscape with Durham, Cecil, Georgeville, Nason, Pacolet, and Rion soils. Cecil, Georgeville, and Pacolet soils have hue redder than 5YR in the Bt horizon. Durham and Rion soils have a fine-loamy particle-size control section. Nason soils have mixed mineralogy. Along the border of the Piedmont and the Sand Hills, Herndon soils are associated on the landscape with Ailey, Blanton, Norfolk, Vaucluse, and Wagram soils, which have a loamy particle-size control section. In addition, Ailey and Vaucluse soils have a dense brittle layer in the subsoil, and Ailey, Blanton, and Wagram soils have either an arenic or a grossarenic epipedon.

Typical pedon of Herndon loam, 2 to 6 percent slopes; 13.7 miles southwest of Camden, 3.8 miles northwest of the junction of U.S. Highway 1 and South Carolina Highway 101, about 1.3 miles southeast of the junction of South Carolina Highways 101 and 334, about 1,400 feet southeast of Harmony Church, 30 feet north of a field road, and 40 feet north of large oak tree with markings for land corner and galvanized corner stake on southern side of field road.

A1—0 to 6 inches; brown (10YR 5/3) loam; weak fine granular structure; friable; many fine and medium roots; about 3 percent fine quartz pebbles; very strongly acid; abrupt smooth boundary.

Bt1—6 to 22 inches; brownish yellow (10YR 6/8) silty clay; few fine distinct yellowish red (5YR 4/6)

mottles; moderate medium subangular blocky structure; friable; common fine and medium roots; common distinct clay films on faces of peds; many fine and very fine pores; very strongly acid; gradual wavy boundary.

Bt2—22 to 33 inches; brownish yellow (10YR 6/8) silty clay loam; common medium distinct red (2.5YR 4/6) mottles; moderate medium subangular blocky structure; friable; few fine roots; common medium pockets of highly weathered very pale brown (10YR 8/3, and 7/3) shale; common distinct clay films on faces of peds; common fine and very fine pores; extremely acid; gradual wavy boundary.

BC—33 to 46 inches; brownish yellow (10YR 6/8) silt loam; many coarse prominent red (2.5YR 4/6) mottles and common medium distinct very pale brown (10YR 7/3) and white (10YR 8/2) mottles; very pale brown and gray mottles are relict colors of parent material; weak medium subangular structure; friable; few fine roots; common fine and very fine pores; very strongly acid; gradual wavy boundary.

C—46 to 51 inches; mottled brownish yellow (10YR 6/8), red (2.5YR 4/6), and white (10YR 8/2) silt loam; massive; friable; very strongly acid; clear wavy boundary.

Cr—51 to 60 inches; red (2.5YR 4/6) weathered shale that crushes to silt; few medium distinct white (10YR 8/1) mottles; massive; firm; very strongly acid.

The solum is 40 to 60 inches or more thick. Reaction ranges from extremely acid to strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. Some pedons have few fine pebbles of quartz.

The Bt horizon has hue of 5YR to 10YR, value of 5 to 6, and chroma of 4 to 8. The texture generally is silty clay, clay loam, or clay, but it is silty clay loam in a subhorizon in some pedons. In some pedons, mottles in shades of brown and red are in the lower part of this horizon.

The C horizon is mottled in shades of white, brown, or red. The texture is silt loam, loam, or sandy loam.

The Cr horizon is red, yellowish red, or strong brown, firm weathered shale that crushes to silt loam or silt.

Iredell Series

The Iredell series consists of soils that formed in residuum from amphibolites. These soils are on medium ridgetops of the Piedmont. Slopes are 1 to 6 percent. These soils are classified as fine, montmorillonitic, thermic Typic Hapludalfs.

Iredell soils are associated on the landscape with Madison, Pacolet, and Winnsboro soils. Madison soils have kaolinitic mineralogy, are Ultisols, and have large amounts of mica. Pacolet and Winnsboro soils have a thinner solum than that of the Iredell soils.

Typical pedon of Iredell loam, 1 to 6 percent slopes; from the intersection of South Carolina Highways 97 and 57, about 2 miles northeast on Highway 57, about 0.5 mile west on woodland road, and 0.3 mile north of the road.

A—0 to 6 inches; dark yellowish brown (10YR 4/4) loam; moderate medium granular structure; friable; many fine roots; slightly acid; clear smooth boundary.

Bt1—6 to 8 inches; dark yellowish brown (10YR 4/6) sandy clay loam; weak medium subangular blocky structure; slightly sticky; few fine dark concretions; few fine and medium roots; slightly acid; clear smooth boundary.

Bt2—8 to 21 inches; light olive brown (2.5Y 5/6) clay; moderate medium subangular blocky structure; slightly sticky and very plastic; few quartz granules; few fine roots; slightly acid; gradual smooth boundary.

Bt3—21 to 25 inches; olive (5Y 5/4) clay; moderate medium subangular blocky structure; very sticky and very plastic; common fine dark concretions; neutral; clear smooth boundary.

BC—25 to 29 inches; mottled yellowish brown (10YR 5/6), dark gray (N 4/0), and olive (5Y 4/4) sandy clay loam; weak medium subangular blocky structure; sticky and slightly plastic; common fragments of weathered rock; neutral; clean smooth boundary.

C—29 to 38 inches; mottled olive gray (5Y 5/2), black (5Y 2.5/1), and yellowish brown (10YR 5/4) sandy loam; massive; friable; neutral; clear smooth boundary.

Cr—38 to 45 inches; mottled black (5Y 2.5/1), olive (5Y 4/4), and white (10YR 8/1) weathered rock that crushes to sandy loam; firm; neutral; abrupt wavy boundary.

R—45 inches; bedrock.

The solum is 29 to 36 inches thick. Reaction is strongly acid to neutral in the A horizon, slightly acid to mildly alkaline in the B horizon, and neutral to moderately alkaline in the C horizon.

The A horizon has hue of 10YR, value of 4, and

chroma of 2 to 6. The Bt horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 4 or 6 and has mottles that have chroma of 2 or less. The texture is clay. The C horizon is mottled in shades of olive, gray, brown, yellow, or black. The texture is sandy loam. The Cr horizon is mottled olive, yellow, brown, or gray weathered bedrock that crushes to sandy loam.

Johnston Series

The Johnston series consists of soils that formed in alluvial sediment. These soils are on flood plains of the Coastal Plain. Slopes are dominantly less than 1 percent. These soils are classified as coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts.

Johnston soils are associated on the landscape with Grady, Dorovan, Pantego, and Rains soils, which except for the Dorovan soils are mineral soils and have a black surface layer less than 24 inches thick. Dorovan soils are organic.

Typical pedon of Johnston loam; about 5.6 miles northwest of Bethune, 1.3 miles southeast of the junction of State Highways 42 and 341, about 1.2 miles southeast of the junction of State Highway 41 and a county dirt road, 2,500 feet east of the junction of Red Oak Camp Creek and a county dirt road, 1,225 feet north of a field road crossing of pond dam, and 100 feet north of the road.

A1—0 to 11 inches; black (10YR 2/1) loam; high in organic matter; massive; friable; many fine and medium and few large roots; very strongly acid; gradual smooth boundary.

A2—11 to 30 inches; black (10YR 2/1) loam; massive; friable; common fine and medium and few large roots; very strongly acid; abrupt smooth boundary.

Cg—30 to 66 inches; light gray (10YR 7/1) loamy sand; common medium distinct gray (10YR 5/1) and few medium distinct dark gray (10YR 4/1) pockets of sandy loam in old root channels; few fine faint very pale brown mottles; massive; friable; common clean uncoated grains of quartz sand; very strongly acid.

Reaction is very strongly acid or strongly acid.

The A horizon has hue of 10YR, value of 2, and chroma of 1, or it is neutral and has value of 2. The texture is loam or mucky loam.

The C horizon has hue of 10YR, value of 4 to 7, and chroma of 1 or 2. The texture generally is loamy sand, sandy loam, or fine sandy loam, but some pedons have thin layers of sand or sandy clay loam.

Lakeland Series

The Lakeland series consists of soils that formed in sandy marine sediment. These soils are on broad ridgetops and side slopes in the Sand Hills. Slopes are 0 to 15 percent. These soils are classified as thermic, coated Typic Quartzipsamments.

Lakeland soils are associated on the landscape with Ailey, Alpin, Blanton, Pelion, and Wagram soils, which except for the Alpin soils have an argillic horizon. Alpin soils have lamellae.

Typical pedon of Lakeland sand, 0 to 6 percent slopes; 13.7 miles northeast of Camden, 950 feet northeast of the junction of State Highways 20 and 354, about 500 feet west of Baron Dekalb High School, and 30 feet west of State Highway 20.

A—0 to 5 inches; gray (10YR 5/2) sand; single grained; very friable; common fine and medium roots; very strongly acid; clear smooth boundary.

C1—5 to 22 inches; very pale brown (10YR 7/4) sand; single grained; loose; common fine roots; strongly acid; gradual smooth boundary.

C2—22 to 44 inches; light yellowish brown (10YR 6/4) sand; single grained; very friable; few fine roots; strongly acid; gradual smooth boundary.

C3—44 to 68 inches; very pale brown (10YR 7/4) sand; single grained; very friable; few fine roots; strongly acid; gradual smooth boundary.

C4—68 to 84 inches; very pale brown (10YR 7/3) sand; single grained; loose; common uncoated grains of white quartz sand; few fine roots; strongly acid.

Reaction is very strongly acid to medium acid except where lime has been added to the soil. The profile is sand to a depth of more than 80 inches. In many places, a very thin layer of light gray uncoated grains of quartz sand is on the surface.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The C horizon has hue of 10YR, value of 5 to 7, and chroma 3 to 8.

Lugoff Series

The Lugoff series consists of soils that formed in loamy marine sediment. These soils are on medium to broad interstream divides and the accompanying side slopes of the Coastal Plain. Slopes are 2 to 15 percent. These soils are classified as clayey, kaolinitic, thermic Typic Paleudults.

Lugoff soils are associated on the landscape with Ailey, Georgeville, Herndon, Greenville, Nason, Norfolk, Faceville, Summerton, and Wagram soils. None of these soils have a gravelly texture. In addition, Ailey and Wagram soils have an arenic epipedon. Georgeville, Herndon, and Nason soils have more than 30 percent silt in the control section. Norfolk soils have a fine-loamy particle-size control section. Faceville soils have a redder solum than that of the Lugoff soils.

Typical pedon of Lugoff gravelly loamy sand, 2 to 6 percent slopes; 5.8 miles west of Camden, 0.9 mile northwest of the junction of State Highways 5 and 128, about 0.6 mile southeast of the State Highway 128 crossing over Horse Head Branch, 1,725 feet north of the junction of field road leading north and State Highway 128, about 200 feet north of the field road, and 200 feet west of woods.

Ap—0 to 8 inches; dark gray (10YR 4/1) gravelly loamy sand; moderate medium granular structure; very friable; many fine roots; 25 percent rounded quartz pebbles, 0.25 to 3 inches in diameter; strongly acid; clear smooth boundary.

E—8 to 14 inches; light yellowish brown (10YR 6/4) gravelly sandy loam; moderate medium granular structure; very friable; common fine roots; 42 percent rounded quartz pebbles, 0.25 to 2.50 inches in diameter; medium acid; clear smooth boundary.

Bt1—14 to 34 inches; brownish yellow (10YR 6/6) gravelly clay; common medium distinct yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots; few faint clay films on faces of peds; 22 percent rounded quartz pebbles, 0.25 to 2 inches in diameter; strongly acid; gradual wavy boundary.

Bt2—34 to 47 inches; strong brown (7.5YR 5/6) clay; many medium distinct yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; few faint clay films on faces of peds; 11 percent rounded quartz pebbles, 0.25 to 2 inches in diameter; strongly acid; gradual wavy boundary.

Bt3—47 to 65 inches; mottled red (2.5YR 4/6) and reddish yellow (7.5YR 6/6) clay; common medium distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; 2 percent rounded quartz pebbles; 0.25 to 1.50 inches in diameter; very strongly acid.

The solum is more than 65 inches thick. Reaction is very strongly acid to medium acid except where lime has been added to the soil. Rounded quartz pebbles commonly range from 15 to 20 percent in the A horizon, from 15 to 35 percent in the upper part of the Bt horizon, and up to 20 percent in the lower part. Most pedons have one or more stone lines at some depth that are more than 40 percent rounded quartz pebbles.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The texture is gravelly loamy sand or gravelly sandy loam.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 5. The texture is gravelly loamy sand or gravelly sandy loam.

The Bt horizon has hue of 2.5YR to 10YR, value of 4 to 6, and chroma of 4 to 6. Mottles in shades of red, yellow, or brown are in the lower part of this horizon. The texture generally is gravelly clay in the upper part of this horizon and clay in the lower part. In some pedons, it is gravelly clay and in others it is gravelly sandy clay loam, gravelly clay loam, or gravelly sandy clay in some subhorizons.

Madison Series

The Madison series consists of soils that formed in residuum weathered from granite. These soils are on broad to medium ridges and on side slopes adjacent to drainageways of the Piedmont. Slopes are 2 to 60 percent. These soils are classified as clayey, kaolinitic, thermic Typic Hapludults.

Madison soils are associated on the landscape with Durham, Cecil, Iredell, Pacolet, and Rion soils. These soils have less mica in the profile than the Madison soils. In addition, Durham and Cecil soils have a solum more than 40 inches thick, and Iredell soils have montmorillonitic mineralogy.

Typical pedon of Madison sandy loam, 6 to 10 percent slopes, eroded; from the intersection of South Carolina Highways 97 and 57, about 3.6 miles east on Highway 57, about 0.8 mile north on a dirt road, and 25 yards west of road.

A1—0 to 3 inches; brown (10YR 4/3) sandy loam; weak medium granular structure; very friable; many fine and few large roots; few fine flakes of mica; many small rounded quartz pebbles; strongly acid; clear smooth boundary.

Bt1—3 to 11 inches; strong brown (7.5YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; many fine and medium roots; common fine flakes of mica; many small rounded quartz pebbles; strongly acid; gradual wavy boundary.

Bt2—11 to 27 inches; yellowish red (5YR 5/8) clay; moderate medium subangular blocky structure;

friable; few fine roots; common faint clay films on faces of peds; many fine flakes of mica; common small rounded quartz pebbles; strongly acid; gradual wavy boundary.

Bt3—27 to 34 inches; yellowish red (5YR 5/8) sandy clay loam; weak fine subangular blocky structure; friable; many fine and medium flakes of mica; many small rounded quartz pebbles; strongly acid; gradual wavy boundary.

C—34 to 60 inches; yellowish red (5YR 5/8) saprolite or mica shist that crushes easily to sandy loam; common medium distinct olive gray (5Y 5/2) mottles; massive rock surface; friable; strongly acid.

The solum is 32 to 40 inches thick. Reaction is very strongly acid or strongly acid except where lime has been added to the soil. Flakes of mica range from few to common in the A horizon and from common to many in the B horizon.

The A horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 2 or 4. The texture generally is sandy loam, but in some pedons it is sandy clay loam.

The Bt horizon has hue of 10R to 7.5YR, value of 4 to 6, and chroma of 6 or 8. The texture is clay loam or clay. Pebbles of feldspar range from none to many.

The C horizon is mottled in shades of red, brown, or white. The texture is firm saprolite that crushes to loamy sand, sandy loam, or sandy clay loam.

Nason Series

The Nason series consists of soils that formed in residuum weathered from Carolina slates. These soils are on ridges and side slopes of the Piedmont. Slopes are 6 to 25 percent. These soils are classified as clayey, mixed, thermic Typic Hapludults.

Nason soils are associated on the landscape with Ailey, Georgeville, and Herndon soils. Ailey soils are arenic, have a dense brittle layer in the subsoil, and have a fine-loamy particle-size control section. Georgeville and Herndon soils have a solum 40 to 50 inches thick. In addition, Georgeville soils have a redder subsoil than that of the Nason soils.

Typical pedon of Nason loam, 10 to 25 percent slopes; 2 miles south of Kershaw on U.S. Highway 601 and 50 feet east of highway.

A1—0 to 6 inches; brown (10YR 4/3) loam; weak fine granular structure; friable; strongly acid; abrupt smooth boundary.

BA—6 to 10 inches; yellowish brown (10YR 5/4) loam; weak fine granular structure; friable; strongly acid; gradual wavy boundary.

Bt1—10 to 17 inches; strong brown (7.5YR 5/6) silty clay; common medium distinct yellowish red (5YR 5/6) mottles; weak fine subangular blocky structure; friable; strongly acid; gradual wavy boundary.

Bt2—17 to 31 inches; yellowish red (5YR 5/6) silty clay; many medium faint pink (5YR 7/3) mottles; moderate medium subangular blocky structure; friable; strongly acid; gradual wavy boundary.

C1—31 to 52 inches; mottled yellowish red (5YR 5/6) and red (10YR 4/6) silt loam; massive; friable; strongly acid; abrupt wavy boundary.

C2—52 to 60 inches; mottled yellowish red (5YR 5/6) and red (10R 4/6) loam; massive; friable; strongly acid.

The solum is 26 to 38 inches thick. Depth to bedrock is 40 to 60 inches or more. Reaction is very strongly acid or strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 2 or 3.

The Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8. The texture is silty clay, clay, or clay loam.

The C horizon is mottled in shades of yellow, red, and brown. The texture is silt loam or loam.

Norfolk Series

The Norfolk series consists of soils that formed in loamy marine sediment. These soils are on broad interstream divides of the Coastal Plain. Slopes are 0 to 6 percent. These soils are classified as fine-loamy, siliceous, thermic Typic Paleudults.

Norfolk soils are associated on the landscape with Grady, Persanti, Goldsboro, Faceville, Rains, Summerton, and Wagram soils. Grady, Persanti, and Summerton soils have a clayey particle-size control section. Goldsboro soils are Aquic Paleudults. Faceville soils have a Bt horizon that has hue of 5YR or redder. Rains soils are aquults. Wagram soils have an arenic epipedon.

Typical pedon of Norfolk loamy sand, 0 to 2 percent slopes; 2.8 miles southwest of Camden, 1.5 miles southeast of the junction of U.S. Highway 1 and State Highways 34 and 38, about 0.6 mile southeast of the junction of State Highways 38 and 133 and an unpaved county road, 635 feet north of the junction of an unpaved county road and a field road leading north, 50 feet southeast of third light pole along field road, and 20 feet east of the field road.

Ap—0 to 8 inches; grayish brown (10YR 5/2) loamy

sand; few medium distinct light yellowish brown (10YR 6/4) mottles; single grained; very friable; many fine roots; medium acid; abrupt smooth boundary.

E—8 to 14 inches; light yellowish brown (10YR 6/4) sandy loam; common medium distinct grayish brown (10YR 5/2) mottles and few fine faint brownish yellow mottles; single grained; very friable; common fine roots; medium acid; clear smooth boundary.

Bt1—14 to 42 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; many fine pores; few fine roots; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—42 to 53 inches; yellowish brown (10YR 5/6) sandy clay loam; common coarse distinct pale brown (10YR 6/3) mottles and few medium distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; common fine pores; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt3—53 to 60 inches; yellowish brown (10YR 5/6) sandy clay loam; common medium distinct light gray (10YR 7/1) and yellowish red (5YR 5/6) mottles and few medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine flakes of mica; very strongly acid; gradual wavy boundary.

BC—60 to 70 inches; mottled red (2.5YR 5/6), light gray (10YR 7/1), and yellowish brown (10YR 5/6) sandy clay loam; common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; few fine flakes of mica; few pockets of sandy clay and sandy loam; very strongly acid.

The solum is 65 to 80 inches or more thick. Reaction is very strongly acid or strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. The texture is loamy sand or sandy loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 4 or 6. Few to many mottles in shades of red, yellow, or brown are in the lower part of this horizon. In some pedons, mottles in shades of gray are below a depth of 50 inches. The texture of the Bt horizon is sandy clay loam.

Pacolet Series

The Pacolet series consists of soils that formed in material weathered mostly from acid crystalline rocks. These soils are on side slopes adjacent to drainageways of the Piedmont. Slopes are 6 to 25 percent. These soils are classified as clayey, kaolinitic, thermic Typic Hapludults.

Pacolet soils are associated on the landscape with Cecil, Greenville, Madison, Poindexter, and Rion soils. Cecil and Greenville soils have a thicker solum than the Pacolet soils. Madison soils have more mica throughout the profile. Poindexter soils have mixed mineralogy and a fine-loamy control section.

Typical pedon of Pacolet sandy clay loam, 10 to 15 percent slopes, eroded; from the intersection of South Carolina Highway 97 and County Road 445 in Liberty Hill, 3.4 miles south on County Road 445, and 50 feet north of road.

A—0 to 3 inches; reddish brown (5YR 4/4) sandy clay loam; weak medium subangular blocky structure; friable; few small rounded pebbles; common medium and fine roots; strongly acid; clear smooth boundary.

Bt1—3 to 18 inches; red (10R 4/8) clay; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; few fine flakes of mica; few fine and medium roots; medium acid; gradual wavy boundary.

Bt2—18 to 25 inches; red (10R 4/8) clay; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; many fine flakes of mica; medium acid; gradual wavy boundary.

C1—25 to 35 inches; red (10R 4/8) clay loam; massive; friable; 50 percent soft saprolite that crushes easily; many fine flakes of mica; medium acid; gradual wavy boundary.

C2—35 to 40 inches; red (10R 4/8) clay loam; massive; friable; 75 percent soft saprolite that crushes easily; many fine flakes of mica; medium acid; gradual wavy boundary.

C3—40 to 65 inches; red (10R 4/8) loam; massive; friable; 80 percent soft saprolite that crushes easily; many fine flakes of mica; medium acid.

The solum is 15 to 25 inches thick. Reaction is very strongly acid to slightly acid in the A horizon and very strongly acid to medium acid in the B and C horizons.

The A horizon has hue of 5YR to 10YR, value of 4 to 6, and chroma of 2 to 4. The texture generally is sandy clay loam.

The Bt horizon has hue of 10R to 7.5YR, value of 4 or 5, and chroma of 4 to 8.

The C horizon has hue of 10R, value of 4, and chroma of 6 or 8 and has mottles in shades of yellow, red, or brown. The texture is clay loam, loam, sandy loam, or loamy sand.

Pantego Series

The Pantego series consists of soils that formed in marine and alluvial sediments on broad flats adjacent to flood plains of the Wateree and Lynches Rivers. These soils are also on flood plains of some small creeks and branches and in some depressions or bays of the Coastal Plain. Slopes are less than 1 percent. These soils are classified as fine-loamy, siliceous, thermic Umbric Paleaquults.

Pantego soils are associated on the landscape with Chewacla, Grady, Dorovan, Johnston, and Rains soils. Chewacla and Johnston soils do not have an argillic horizon. Dorovan soils are organic. Grady and Rains soils do not have an umbric epipedon.

Typical pedon of Pantego loam; from the intersection of Interstate 20 and U.S. Highway 601 southwest of Camden, 5.25 miles south on U.S. Highway 601, about 6 miles east on farm road, and 1 mile northeast of bend in farm road.

Ap—0 to 10 inches; black (10YR 2/1) loam; weak fine granular structure; friable; common fine and medium roots; medium acid; gradual wavy boundary.

A—10 to 14 inches; very dark gray (10YR 3/1) fine sandy loam; weak fine granular structure; friable; few fine roots; medium acid; gradual wavy boundary.

BEg—14 to 19 inches; gray (10YR 5/1) sandy loam; common medium distinct very dark gray (10YR 3/1) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

Btg1—19 to 35 inches; gray (10YR 5/1) sandy clay loam; common fine distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; few fine roots; strongly acid; gradual wavy boundary.

Btg2—35 to 46 inches; light gray (10YR 7/1) sandy clay loam; common fine distinct brownish yellow (10YR 6/6) mottles; moderate medium subangular blocky structure; slightly sticky; strongly acid; gradual wavy boundary.

Btg3—46 to 52 inches; light gray (10YR 7/1) sandy clay loam; moderate fine distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; slightly sticky; pockets of clay and sandy loam; strongly acid; gradual wavy boundary.

Btg4—52 to 62 inches; light gray (10YR 7/1) sandy clay loam; moderate fine subangular blocky structure; firm; pockets of white kaolin clay and sandy loam; common fine flakes of mica; strongly acid.

Reaction is extremely acid to strongly acid except where lime has been added to the soil. Thin layers of recent alluvial sediment are on the surface of the overwash phase.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1. The texture generally is loam but ranges to sandy loam.

The Bg horizon has hue of 10YR, value of 4 to 8, and chroma of 1 and has mottles of higher chroma. The texture is sandy loam, sandy clay loam, or sandy clay.

Pelion Series

The Pelion series consists of soils that formed in clayey marine sediment. These soils are on smooth and broken side slopes and toe slopes of the Sand Hills. Slopes are 0 to 10 percent. These soils are classified as fine-loamy, siliceous, thermic Aquic Hapludults.

Pelion soils are associated on the landscape with Ailey, Alpin, Blanton, Norfolk, Wagram, Johnston, Lakeland, and Vaucluse soils. Ailey, Blanton, and Wagram soils have an arenic or a grossarenic sandy surface layer. Alpin and Lakeland soils are Quartzipsamments. Norfolk soils are Paleudults. Johnston soils have a cumulic epipedon. Vaucluse soils are Typic Hapludults.

Typical pedon of Pelion loamy sand, 2 to 6 percent slopes; 2.9 miles southeast of Elgin, 1,950 feet north of the crossover of Interstate Highway 20 over State Highway 102, about 1,600 feet southeast of the junction of State Highways 102 and 3677, about 500 feet south of the junction of State Highway 102 and the main road through Whippoorwill Farms housing subdivision, and 20 feet east of the highway.

A1—0 to 6 inches; grayish brown (10YR 5/2) loamy sand; single grained; very friable; many fine and medium and few large roots; strongly acid; clear wavy boundary.

E—6 to 9 inches; very pale brown (10YR 7/3) loamy sand; single grained; very friable; common fine and few medium roots; strongly acid; clear irregular boundary.

Bt1—9 to 14 inches; light yellowish brown (10YR 6/4) sandy loam; weak medium subangular blocky

structure; friable; common fine roots; thin faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt2—14 to 20 inches; light yellowish brown (10YR 6/4) sandy clay loam; few fine faint light brownish gray mottles; moderate medium subangular blocky structure; common fine roots; many fine pores; few fine distinct gray pockets of sandy clay loam in old pores and cavities; thin faint clay films on faces of peds; very strongly acid; clear wavy boundary.

Bt3—20 to 31 inches; light yellowish brown (10YR 6/4) clay; common fine and medium distinct light gray (10YR 7/2) mottles and common medium distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; firm; common fine pores; many distinct moderately thick clay films on faces of peds; very strongly acid; clear smooth boundary.

Bt4—31 to 37 inches; light yellowish brown (10YR 6/4) clay; many medium distinct light gray (10YR 7/2) mottles and common medium distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; very firm; few fine roots along ped faces; few fine flakes of mica; many fine quartz pebbles; many distinct clay films on faces of peds; common fine to large pockets of light gray and white kaolin clay; very strongly acid; clean wavy boundary.

BC—37 to 43 inches; light gray (10YR 7/1) sandy loam; common medium distinct yellow (10YR 7/6) mottles; weak coarse subangular blocky structure; friable; common fine flakes of mica; very strongly acid; clear smooth boundary.

C1—43 to 49 inches; light gray (10YR 7/1) sandy loam; massive; friable; common white (10YR 8/1) kaolin clay balls, 0.5 to 2 inches in diameter; common fine flakes of mica; extremely acid; abrupt smooth boundary.

C2—49 to 54 inches; light gray (10YR 7/2) clay; common fine distinct brownish yellow (10YR 6/6) mottles; massive; very firm; extremely acid; clear smooth boundary.

C3—54 to 70 inches; alternating layers, 2 to 5 inches thick, of very pale brown (10YR 7/3) sand and light gray (10YR 7/1) kaolin clay; massive; friable in layers of sand, firm in layers of clay; common fine flakes of mica; very strongly acid.

The solum is 42 to 70 inches or more thick. Reaction is extremely acid or strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2. The texture generally is loamy sand but includes sand.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 2 to 4. The texture is loamy sand or sand.

The Bt horizon has hue of 7.5YR or 10YR, value of 6 or 7, and chroma of 4 to 8. Mottles with chroma of 2 or less are in the upper 10 inches of this horizon. The particle-size control section averages more than 35 percent clay, but in most pedons the upper part of the Bt2 horizon is sandy clay loam.

The C horizon is gray with mottles in shades of brown, yellow, and red; or it is mottled in shades of light gray, white, brown, yellow, or red. The texture is sand, loamy sand, sandy loam, sandy clay loam, or clay. Most pedons have balls or streaks of light gray and white kaolin in the lower part of the B horizon and in the C horizon, and some pedons have common flakes of mica in the lower part of the B horizon and in the C horizon.

Persanti Series

The Persanti series consists of soils that formed in unconsolidated clayey marine sediment. These soils are in nearly level areas of the middle and upper Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as clayey, kaolinitic, thermic Aquic Paleudults.

Persanti soils are associated on the landscape with Rains, Grady, and Goldsboro soils. Rains and Goldsboro soils have a fine-loamy particle-size control section. In addition, Rains and Grady soils are Typic Paleaquults.

Typical pedon of Persanti sandy loam, 0 to 2 percent slopes; from the intersection of Interstate 20 and South Carolina Highway 521, about 1 mile south on South Carolina Highway 521, and 75 feet east of highway.

A1—0 to 6 inches; pale brown (10YR 6/3) sandy loam; weak fine subangular blocky structure; very friable; many fine and few medium roots; medium acid; clear smooth boundary.

Bt1—6 to 12 inches; mottled brownish yellow (10YR 6/6) and reddish yellow (7.5YR 6/8) sandy clay loam; few fine prominent light red (10R 6/8) mottles; moderate medium subangular blocky structure; friable; few fine and medium roots; strongly acid; gradual wavy boundary.

Bt2—12 to 19 inches; mottled brownish yellow (10YR 6/6) and reddish yellow (7.5YR 6/8) clay loam; few fine light red (10R 6/8) mottles; moderate medium subangular blocky structure; firm; few distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—19 to 32 inches; reddish yellow (7.5YR 6/8) clay loam; few fine faint light gray (10YR 6/2) mottles and common medium prominent red (2.5YR 4/8) mottles; moderate medium subangular blocky structure; firm; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.
BC—32 to 65 inches; mottled reddish yellow (7.5YR 6/8), red (2.5YR 4/6), and gray (10YR 6/1) clay; strong medium subangular blocky structure; very firm; common distinct clay films on faces of peds; strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to slightly acid except where lime has been added to the soil.

The A horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 3. The texture generally is sandy loam.

The Bt horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 6 to 8, and has mottles in shades of red or gray. The lower part of this horizon is mottled in shades of brown, yellow, or gray. The texture of the Bt horizon is clay.

Poindexter Series

The Poindexter series consists of soils that formed in residuum from amphibolites. These soils are on side slopes of the Piedmont. Slopes are 10 to 25 percent. These soils are classified as fine-loamy, mixed, thermic Typic Hapludalfs.

Poindexter soils are associated on the landscape with Georgeville, Iredell, Nason, and Winnsboro soils. Georgeville and Nason soils have more than 30 percent silt and have a thicker solum than that of the Poindexter soils. In addition, Georgeville soils have a redder subsoil. Iredell and Winnsboro soils have a clayey particle-size control section.

Typical pedon of Poindexter loam, 10 to 25 percent slopes; 9.4 miles northwest of Lugoff, 4.5 miles north of the junction of State Highways 5 and 36, about 2.7 miles northwest of the junction of State Highways 37 and 620, and 20 feet west of western edge of State Highway 620.

A—0 to 4 inches; dark grayish brown (10YR 4/2) silt loam; single grained; friable; common fine and medium roots; slightly acid; clear smooth boundary.
BA—4 to 10 inches; yellowish brown (10YR 5/4) loam; weak fine subangular blocky structure; common fine and few medium roots; medium acid; clear wavy boundary.
Bt—10 to 16 inches; brown (7.5YR 4/4) clay loam; few fine distinct olive yellow (2.5Y 6/6) mottles; strong medium subangular blocky structure; sticky and plastic; about 1 percent ferromanganese concretions; few fragments of dark basic rocks, 1.5 to 3 inches in diameter; few faint clay films on faces of peds; medium acid; clear wavy boundary.
C—16 to 25 inches; mottled yellow (10YR 7/6), grayish brown (10YR 5/2), and olive brown (2.5Y 4/4) sandy loam; few fine distinct very dark grayish brown (7.5YR 3/2) mottles; massive; friable; few fine roots; medium acid; abrupt wavy boundary.
Cr—25 to 40 inches; mottled light gray (2.5YR 7/0), dark gray (2.5YR 4/0), and brownish yellow (10YR 6/6) weathered rock that crushes to sandy loam; slightly acid.
R—40 inches; bedrock.

The solum is 14 to 24 inches thick. Reaction is strongly acid to neutral. Depth to bedrock ranges from 35 to more than 60 inches.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. The texture generally is silt loam but ranges to loam.

The Bt horizon has hue of 5YR to 2.5Y, value of 4 or 5, and chroma of 4 or 6. The texture is clay loam or sandy clay loam.

The C horizon is mottled in shades of yellow, brown, black, or olive. The texture is loam or sandy loam.

The Cr horizon is mottled in shades of gray, yellow, brown, or black. It is firm weathered bedrock that crushes to loamy sand, sandy loam, or loam.

Rains Series

The Rains series consists of soils that formed in loamy marine sediment on broad flats and in depressional areas of the Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as fine-loamy, siliceous, thermic Typic Paleaquults.

Rains soils are associated on the landscape with Grady, Norfolk, Goldsboro, Johnston, and Faceville soils. Grady soils have a clayey particle-size control section. Norfolk, Goldsboro, and Faceville soils are Paleudults. Johnston soils have a cumlic epipedon.

Typical pedon of Rains sandy loam; 0.3 mile northwest of Bethune, 1,500 feet southwest of the junction of State Highways 87 and 341, about 30 feet south of State Highway 87, and 100 feet west of large drainage ditch.

A—0 to 5 inches; very dark gray (10YR 3/1) sandy

loam; single grained; friable; common fine and medium and few large roots; strongly acid; clear smooth boundary.

E—5 to 14 inches; mottled gray (10YR 5/1, 6/1) sandy loam; single grained; friable; common fine and medium roots; strongly acid; clear wavy boundary.

Btg1—14 to 29 inches; gray (10YR 5/1) sandy clay loam; common medium faint gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; few fine roots; few fine quartz pebbles; common fine and few medium pores; few faint clay films on faces of peds and in pores; strongly acid; gradual wavy boundary.

Btg2—29 to 44 inches; light gray (10YR 7/2) sandy clay loam; common coarse distinct gray (10YR 5/1) mottles and few medium distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; slightly sticky; few fine roots; common fine and very fine pores; common distinct clay films on faces of peds; strongly acid; gradual wavy boundary.

Btg3—44 to 68 inches; light gray (10YR 7/1) sandy loam; common medium distinct brownish yellow (10YR 6/6) mottles; weak medium subangular blocky structure; friable; less than 1 percent pebbles, 2 to 5 millimeters in diameter; strongly acid; gradual wavy boundary.

The solum is 60 to 80 inches or more thick. Reaction is very strongly acid or strongly acid except where lime has been added.

The A horizon has hue of 10YR, value of 3 to 5, and chroma of 1 or 2.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2. The texture is sandy loam.

The Btg horizon has hue of 10YR, value of 5 to 7, and chroma of 1 or 2; or it is neutral and has value of 5 to 7. This horizon has mottles in shades of brown, yellow, or gray. The texture is sandy loam or sandy clay loam.

Rion Series

The Rion series consists of soils that formed in residuum from granite and gneiss. These soils are on side slopes of the Piedmont. Slopes are 6 to 40 percent. These soils are classified as fine-loamy, mixed, thermic Typic Hapludults.

Rion soils are associated on the landscape with Cecil, Helena, Madison, and Pacolet soils, which have a clayey particle-size control section.

Typical pedon of Rion gravelly sandy loam, 6 to 15 percent slopes; 15.7 miles northwest of Camden, 3.5 miles north of the junction of State Highways 56 and 97, about 1.1 miles northwest of the junction of State Highways 13 and 56, about 3,600 feet northwest of the junction of a field road leading northwest and State Highway 13, and 20 feet north of the field road.

A—0 to 7 inches; dark gray (10YR 4/1) gravelly sandy loam; single grained; friable; many fine and medium and few large roots; about 23 percent irregularly shaped feldspar pebbles, 2 millimeters to 0.5 inch in diameter; strongly acid; clear smooth boundary.

Bt1—7 to 18 inches; yellowish brown (10YR 5/4) gravelly sandy loam; weak medium subangular blocky structure; friable; common fine roots; many fine and common medium flakes of mica; about 33 percent irregularly shaped feldspar pebbles, 2 millimeters to 0.5 inch in diameter; strongly acid; clear wavy boundary.

Bt2—18 to 26 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam; weak medium subangular blocky structure; friable; common medium distinct strong brown (7.5YR 5/8) mottles; common fine and medium roots; common distinct clay films on faces of peds; many fine and common flakes of mica; about 23 percent irregularly shaped feldspar pebbles, 2 millimeters to 0.5 inch in diameter; strongly acid; clear wavy boundary.

C—26 to 42 inches; reddish yellow (7.5YR 6/6) gravelly sandy loam; massive; friable; about 30 percent irregularly shaped feldspar pebbles, 2 millimeters to 1 inch in diameter; common distinct clay films along fractures; few fine roots along clay films; many fine and medium flakes of mica; very strongly acid; gradual wavy boundary.

Cr—42 to 60 inches; reddish yellow (7.5YR 6/6) partly weathered bedrock that can be crushed to gravelly loamy sand; massive; hard; common distinct grayish brown clay films along fractures; few fine roots along clay films; many medium flakes of mica; very strongly acid.

The solum is 22 to 33 inches thick. Reaction is very strongly acid to slightly acid. Irregularly shaped feldspar pebbles commonly range from 20 to 35 percent.

The A horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 1 to 3.

The Bt horizon has hue of 5YR to 10YR, value of 5 or 6, and chroma of 4 to 8. The texture is gravelly sandy clay loam.

The C horizon has hue of 2.5YR to 10YR, value of 5 to 7, and chroma of 6 or 8. The texture is gravelly

loamy sand or gravelly sandy loam.

The Cr horizon is shades of red, yellow, brown, or white. It is partly weathered bedrock that crushes to gravelly loamy sand or gravelly sandy loam.

Summerton Series

The Summerton series consists of soils that formed in thick sediment on old stream terraces. These soils are on broad, smooth slopes along stream terraces of the Coastal Plain. Slopes are 0 to 2 percent. These soils are classified as clayey, kaolinitic, thermic Typic Paleudults.

Summerton soils are associated on the landscape with Grady, Rains, Norfolk, Persanti, Johnston, and Goldsboro series. Grady and Rains soils are Typic Paleaquults, Johnston soils are cumulic Humaquepts, Goldsboro and Persanti soils are Aquic Paleudults. Norfolk soils have a fine-loamy particle-size control section.

Typical pedon of Summerton sandy loam, 0 to 2 percent slopes; south of Camden, 4.2 miles from the intersection of U.S. Highway 521 and South Carolina Highway 261, about 0.85 mile west on paved road, and 1,200 feet north of road.

Ap—0 to 10 inches; dark red (2.5YR 3/6) sandy loam; weak medium granular structure; friable; few fine roots; medium acid; abrupt smooth boundary.

Bt1—10 to 24 inches; red (10R 4/8) clay loam; moderate medium subangular blocky structure; firm; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt2—24 to 48 inches; red (10R 4/8) clay; moderate medium subangular blocky structure; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt3—48 to 55 inches; red (2.5YR 4/8) clay; moderate medium subangular blocky structure; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

Bt4—55 to 64 inches; red (2.5YR 4/8) clay loam; moderate medium subangular blocky structure; few faint clay films on faces of peds; strongly acid; gradual wavy boundary.

BC—64 to 75 inches; red (2.5YR 4/8) sandy clay loam; weak medium subangular blocky structure; strongly acid.

The solum is more than 65 inches thick. Reaction is very strongly acid to slightly acid in the A horizon and extremely acid or very strongly acid in the B horizon.

The A horizon has hue of 2.5YR to 10YR, value of 3 to 6, and chroma of 6 or 8. The texture generally is sandy loam.

The Bt horizon has hue of 10R or 2.5YR, value of 4 to 6, and chroma of 6 or 8. The texture is clay or clay loam.

Toccoa Series

The Toccoa series consists of soils that formed in alluvial sediment. These soils are on flood plains of the Piedmont and along the Wateree River of the Coastal Plain. Slopes are less than 2 percent. These soils are classified as coarse-loamy, mixed, nonacid, thermic Typic Udifluvents.

Toccoa soils are associated on the landscape with Chewacla, Congaree, and Wehadkee soils, which have a fine-loamy particle-size control section.

Typical pedon of Toccoa sandy loam; 3.3 miles northwest of Camden, 5,575 feet northeast of the junction of State Highway 5 and U.S. Highway 1, about 5,550 feet southeast of the junction of State Highways 128 and 5, about 4,400 feet northeast of the junction of an unpaved road leading northeast and State Highway 5, about 20 feet southeast of unpaved road, and 50 feet west of Wateree River.

Ap—0 to 9 inches; dark brown (10YR 4/3) sandy loam; massive; friable; common thin loamy sand strata, ⅛ to ¼ inch thick; common fine flakes of mica; common fine roots; strongly acid; clear smooth boundary.

C1—9 to 18 inches; yellowish brown (10YR 5/4) loamy fine sand; massive; friable; common fine flakes of mica; few fine roots; strongly acid; clear smooth boundary.

C2—18 to 28 inches; brown (10YR 4/3) sandy loam; massive; friable; common fine and few medium flakes of mica; few fine roots; medium acid; clear wavy boundary.

C3—28 to 39 inches; dark grayish brown (10YR 4/2) sandy loam; massive; friable; few fine roots; common fine flakes of mica; few fragments of partly decayed organic matter; medium acid; clear smooth boundary.

C4—39 to 49 inches; brown (10YR 5/3) sandy loam; few fine distinct pale brown (10YR 6/3) mottles; massive; friable; few fine roots; common fine flakes of mica; common fine pores; medium acid; clear smooth boundary.

C5—49 to 60 inches; brown (10YR 5/3) loam; few medium faint brown (10YR 4/3) mottles and few fine

distinct pale brown (10YR 6/3) and light gray (10YR 7/2) mottles; massive; friable; common fine flakes of mica; common fine and very fine pores; medium acid.

Reaction is strongly acid to slightly acid. All pedons have at least one subhorizon that is medium acid or slightly acid. Flakes of mica range from few to many throughout.

The A horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 2 to 4. The texture is loam or sandy loam.

The C horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 6. Many pedons have a buried surface layer below a depth of 20 inches that has chroma of 2. Gray mottles are below a depth of 40 inches. The texture of the C horizon generally is sandy loam, but thin strata of loamy fine sand, loam, or clay loam are in most pedons. Some pedons have gravelly strata that has many quartz and feldspar pebbles.

Vaucluse Series

The Vaucluse series consists of soils that formed in loamy marine sediment. These soils are on side slopes of narrow and medium ridges of the Coastal Plain and Sand Hills. Slopes are 6 to 15 percent. These soils are classified as fine-loamy, siliceous, thermic Typic Hapludults.

Vaucluse soils are associated on the landscape with Ailey, Blanton, Pelion, and Lakeland soils. Ailey soils have an arenic epipedon. Blanton and Pelion soils do not have a dense brittle subsoil. In addition, Blanton soils have a grossarenic epipedon. Lakeland soils do not have an argillic horizon.

Typical pedon of Vaucluse loamy sand, 6 to 10 percent slopes; 2.4 miles southeast of Kershaw, 1,850 feet south of the junction of State Highways 341 and 85, about 4,200 feet northwest of the junction of State Highways 341 and 41, about 900 feet southwest of the junction of a field road leading southwest and State Highway 341, and 30 feet east of the road.

A—0 to 5 inches; grayish brown (10YR 5/2) loamy sand; weak fine granular structure; very friable; many fine and medium and few large roots; very strongly acid; clear wavy boundary.

Bt—5 to 15 inches; yellowish red (5YR 5/6) sandy clay loam; common fine distinct red (2.5YR 5/6) mottles and common medium distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; friable; common fine and medium roots; few faint clay films on faces of peds; common fine pores; very strongly acid; abrupt wavy boundary.

BC1—15 to 19 inches; yellowish red (5YR 5/6) sandy clay loam; common yellow (10YR 7/6) horizontal and vertical streaks; massive; brittle, dense, and slightly cemented in about 35 percent of the mass; few fine roots along faces between yellowish red and yellow soil; few faint clay films along faces between yellowish red and yellow soil; very strongly acid; gradual wavy boundary.

BC2—19 to 48 inches; yellowish red (5YR 5/6) sandy loam; common medium distinct red (2.5YR 4/6) mottles; many horizontal and vertical streaks of gray (10YR 6/1), pale brown (10YR 6/3), and yellow (10YR 7/6) sandy clay; massive in yellowish red part and moderate medium subangular blocky structure in gray, pale brown, and yellow part; brittle, dense, and slightly cemented in about 45 percent of the mass and firm in the rest; few distinct clay films on faces of peds; few fine roots; about 2 percent, by volume, ironstone fragments; very strongly acid; clear wavy boundary.

BC3—48 to 54 inches; yellowish red (5YR 5/6) sandy loam; weak coarse subangular blocky structure; friable; few gray and pale brown kaolin clay balls, 0.5 to 1 inch in diameter; about 4 percent, by volume, ironstone fragments; very strongly acid; clear wavy boundary.

C—54 to 65 inches; yellowish red (5YR 5/6) sandy loam; common medium distinct red (2.5YR 4/6), pink (5YR 7/3), and yellow (10YR 7/8) mottles; massive; friable; about 2 percent fine quartz pebbles; very strongly acid.

The solum is 50 to 65 inches or more thick. Depth to the dense, brittle layer ranges from 15 to 34 inches. Reaction is extremely acid to strongly acid except where lime has been added to the soil.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. The texture is loamy sand or sand.

The Bt horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 4 to 8 and has mottles in shades of red and brown. The texture generally is sandy clay loam, but some pedons have a subhorizon of sandy loam, sandy clay, or clay loam.

The BC horizon is shades of red, yellow, or brown. Some pedons have few to common mottles in shades of gray in the lower part of this horizon. About 25 to 50 percent of the horizon is brittle and slightly cemented. The texture is sandy loam or sandy clay loam.

The C horizon is yellowish red or is mottled in

shades of red, brown, or yellow. The texture is sandy loam or loamy sand.

Wagram Series

The Wagram series consists of soils that formed in sandy and loamy marine sediments. These soils are on ridgetops of the Sand Hills and the Coastal Plain. Slopes are 0 to 6 percent. These soils are classified as loamy, siliceous, thermic Arenic Paleudults.

Wagram soils are associated on the landscape with Ailey, Blanton, Pelion, and Norfolk soils. Pelion and Ailey soils have a dense, brittle layer in the subsoil. Blanton soils have a grossarenic epipedon. Norfolk soils do not have an arenic epipedon.

Typical pedon of Wagram sand, 0 to 6 percent slopes; 4.6 miles southwest of Camden, 1.2 miles northwest of the junction of U.S. Highway 601 and State Highway 133, about 810 feet south of State Highway 133, and 30 feet northwest of red oak in pecan grove.

Ap—0 to 8 inches; grayish brown (10YR 5/2) sand; weak medium granular structure; very friable; many fine and common medium roots; strongly acid; abrupt wavy boundary.

E1—8 to 15 inches; light yellowish brown (10YR 6/4) sand; single grained; very friable; common streaks of grayish brown (10YR 5/2) material from Ap horizon; common fine and medium roots; medium acid; gradual smooth boundary.

E2—15 to 31 inches; very pale brown (10YR 7/4) sand; weak medium granular structure; very friable; medium acid; clear smooth boundary.

Bt1—31 to 42 inches; yellowish brown (10YR 5/8) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; many fine pores; few faint clay films on faces of peds; very strongly acid; gradual wavy boundary.

Bt2—42 to 54 inches; yellowish brown (10YR 5/8) sandy clay loam; common medium distinct reddish yellow (5YR 6/8) and yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; common fine pores; very strongly acid; gradual smooth boundary.

Bt3—54 to 70 inches; yellowish brown (10YR 5/8) sandy clay; many medium distinct red (2.5YR 4/6) and pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to medium acid.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 or 2. The E horizon has hue of 10YR, value of 6 or 7, and chroma of 3 or 4. The texture is sand or loamy sand. The Bt horizon has hue of 7.5YR or 10YR, value of 5 or 6, and chroma of 6 or 8. In some pedons, the lower part of this horizon is mottled in shades of red, yellow, and brown. The texture is sandy clay loam or sandy loam in the upper part of this horizon and sandy clay loam or sandy clay in the lower part.

Wehadkee Series

The Wehadkee series consists of soils that formed in alluvial sediment on the flood plains of the Piedmont and the Coastal Plain. Slopes are less than 1 percent. These soils are classified as fine-loamy, mixed, nonacid, thermic Typic Fluvaquents.

Wehadkee soils are associated on the landscape with Chewacla, Congaree, Toccoa, Johnston, and Dorovan soils. Congaree soils are Udifluvents. Chewacla soils are Inceptisols. Toccoa soils have a coarse-loamy particle-size control section. Johnston soils have a cumulic epipedon. Dorovan soils are organic.

Typical pedon of Wehadkee silt loam; 6.4 miles northwest of Bethune, 5,200 feet south of State Highways 42 and 87, about 3,075 feet northwest of crossover of State Highway 42 over Little Lynches River, 190 feet northwest of road sign (warning of curve in road) on eastern side of State Highway 42, and 150 feet west of western edge of pavement.

A1—0 to 4 inches; light brownish gray (10YR 6/2) silt loam; weak fine granular structure; friable; many fine and medium and few large roots; very strongly acid; clear smooth boundary.

A2—4 to 9 inches; gray (10YR 5/1) silt loam; light yellowish brown (10YR 6/4) mottles; weak fine granular structure; friable; common fine fragments of organic matter; common fine and medium and few large roots; very strongly acid; clean smooth boundary.

Bg1—9 to 27 inches; gray (10YR 5/1) silt loam; common medium prominent yellowish red (5YR 5/8) mottles and few medium faint light gray (10YR 6/1) mottles; weak medium subangular blocky structure; friable; common fine and few medium and large roots; many fine and very fine pores; few distinct clay films in pores or cavities; very strongly acid; gradual smooth boundary.

Bg2—27 to 35 inches; gray (10YR 5/1) loam; common medium prominent yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; slightly sticky and slightly plastic; few fine and medium roots; few fine flakes of mica; many fine and very fine pores and cavities; few distinct clay films in pores and cavities; very strongly acid; gradual smooth boundary.

Bg3—35 to 46 inches; light gray (10YR 6/1) loam; common coarse prominent brownish yellow (10YR 5/6) mottles and common fine distinct strong brown (7.5YR 5/6) mottles; weak medium subangular blocky structure; slightly sticky and slightly plastic; few fine and medium roots; common fine flakes of mica; few fine fragments of organic matter; less than 1 percent fine quartz and feldspar pebbles; many fine and very fine pores; few distinct clay films in pores and cavities; strongly acid; gradual wavy boundary.

Cg1—46 to 63 inches; light gray (10YR 6/1) sandy loam; many coarse prominent yellowish brown (10YR 5/6) mottles and common coarse prominent strong brown (7.5YR 5/6) mottles; massive; friable; common balls and streaks of clay; about 5 percent fine quartz pebbles; common fine flakes of mica; strongly acid; clear wavy boundary.

Cg2—63 to 70 inches; mottled yellowish brown (10YR 5/6) and light gray (10YR 6/1) loam; massive; slightly sticky; common fine quartz pebbles; few fine flakes of mica; strongly acid.

The solum is 32 to 50 inches or more thick. Reaction is very strongly acid to slightly acid. Content of fine flakes of mica ranges from few to common.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 1 or 2. The texture generally is silt loam but includes loam.

The B horizon has hue of 10YR, value or 4 to 6, and chroma of 1 or 2 and has mottles in shades of yellow, brown, or red. The texture is loam, silty clay loam, sandy clay loam, or clay loam.

The C horizon is gray with mottles in shades of brown, or it is mottled in shades of brown and gray. The texture generally is loam or sandy loam. Some pedons have a stratified layer of heavier material.

Wickham Series

The Wickham series consists of soils that formed in alluvial sediment. These soils are in flat areas and on side slopes in the Piedmont and the Coastal Plain. Slopes are 0 to 15 percent. These soils are classified as fine-loamy, mixed, thermic Typic Hapludults.

Wickham soils are associated on the landscape with Altavista, Chewacla, Congaree, Georgeville, Greenville, and Nason soils. Altavista soils are Aquic Hapludults. Chewacla and Congaree soils do not have an argillic horizon. Georgeville, Greenville, and Nason soils have a clayey particle-size control section.

Typical pedon of Wickham fine sandy loam, 0 to 2 percent slopes; 4 miles northwest of Lugoff, 1.8 miles southeast of the junction of State Highways 913 and 37, about 3,450 feet southeast of the end of pavement of State Highway 913, about 1,500 feet west of Wateree River, 70 feet west of farm pond, and 40 feet east of power line right-of-way.

Ap—0 to 5 inches; grayish brown (10YR 5/2) fine sandy loam; weak fine granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.

E—5 to 14 inches; yellowish brown (10YR 5/6) fine sandy loam; weak fine granular structure; very friable; common fine roots; medium acid; clear smooth boundary.

Bt1—14 to 23 inches; red (2.5YR 4/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine flakes of mica; common fine roots; medium acid; gradual smooth boundary.

Bt2—23 to 51 inches; (2.5YR 4/8) sandy clay loam; few fine distinct yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; few faint clay films on faces of peds; few fine roots; common fine flakes of mica; medium acid; gradual smooth boundary.

BC—51 to 60 inches; red (2.5YR 5/8) clay loam; few fine distinct pale brown (10YR 6/3) mottles; weak medium subangular blocky structure; friable; few fine roots; common sandy loam pockets, 0.5 to 2 inches in diameter; common fine flakes of mica; medium acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to medium acid.

The A horizon has hue of 10YR, value of 4 to 6, and chroma of 2 to 4. The texture generally is fine sandy loam but includes sandy loam.

The E horizon has hue of 10YR, value of 5 to 7, and chroma of 3 to 6. The texture is sandy loam or fine sandy loam.

The Bt horizon has hue or 2.5YR or 5YR, value of 4 to 6, and chroma of 6 or 8. The texture generally is sandy clay loam, but some subhorizons are clay loam.

Winnsboro Series

The Winnsboro series consists of soils that formed in residuum from amphibolites. These soils are on medium to broad ridges and side slopes of the Piedmont. Slopes are 2 to 10 percent. These soils are classified as fine, mixed, thermic Typic Hapludalfs.

Winnsboro soils are associated on the landscape with Georgeville, Iredell, and Nason soils. Georgeville and Nason are Ultisols. Iredell soils have montmorillonitic mineralogy.

Typical pedon of Winnsboro loam, 6 to 10 percent slopes; 9.3 miles northwest of Lugoff, 1.3 miles east of the junction of State Highways 5 and 303, about 3,800 feet southeast of the junction of a field road leading south and State Highway 303, about 75 feet south of western edge of culvert under field road, and 20 feet west of the road.

A—0 to 4 inches; brown (10YR 5/3) loam; single grained; friable; common fine and medium roots; medium acid; abrupt wavy boundary.

BA—4 to 9 inches; light yellowish brown (10YR 6/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; medium acid; clear wavy boundary.

Bt1—9 to 17 inches; strong brown (7.5YR 5/6) clay; few faint white fragments of weathered rock; strong medium subangular blocky structure; sticky and plastic; few distinct clay films on faces of peds; medium acid; clear wavy boundary.

Bt2—17 to 27 inches; strong brown (7.5YR 5/6) clay; few fine faint yellowish red mottles; strong medium subangular blocky structure; sticky and plastic; common distinct clay films on faces of peds; few fine roots; common fragments of dark basic rocks, 1 to 1.5 inches in diameter; medium acid; clear wavy boundary.

C—27 to 46 inches; mottled reddish yellow (7.5YR 6/8) and yellowish red (5YR 5/8) sandy clay loam; few fine prominent red (2.5YR 4/6) mottles; massive; friable; few fine roots; about 4 percent fine ferromanganese concretions; medium acid; abrupt wavy boundary.

Cr—46 to 60 inches; mottled red, yellowish red, pale brown, and strong brown weathered bedrock that crushes to sandy loam; slightly acid.

The solum is 25 to 49 inches thick. Reaction is strongly acid to slightly acid in the surface layer and slightly acid to mildly alkaline in the subsoil and substratum.

The A horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 3. The texture generally is sandy loam but includes loam and silt loam.

The Bt horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 4 to 6. The texture is clay.

The C horizon is mottled in shades of yellow, red, brown, or black. The texture is sandy loam, sandy clay loam, or loam.

The Cr horizon is mottled in shades of red, yellow, brown, or black. It is firm weathered bedrock that crushes to sandy loam or loam.

Formation of the Soils

This section describes the factors of soil formation as they relate to the soils in the county and explains the processes of soil formation.

Factors of Soil Formation

Soil is a collection of natural bodies on the earth's surface that has living matter and supports or is capable of supporting plants. Soil includes the horizons near the surface that differ from the underlying rock material as a result of the interactions of the soil-forming factors: parent material, climate, topography, living organisms (plants and animals), and time.

Climate and living organisms are the active factors in soil formation. Their effect on the parent material is modified by the topography and the length of time the parent material has been in place. The relative importance of each factor differs, however, from one place to another. In some places one factor dominates in the formation and determines most of the properties of the soil, but generally it is the interaction of all five factors that determines the kind of soil formed.

Although soil formation is complex, some understanding of the soil-forming processes can be gained by considering each of the five factors separately. It should be remembered, however, that each of the five factors is affected by and also affects each of the other factors.

Parent Material

Parent material is the unconsolidated rock mass in which a soil forms. Its formation is the first step in soil development. The parent material of the soils of the Kershaw County area generally derived from transported material; however, since the soils derived from both residual and transported parent material, they vary widely in their content of sand, silt, and clay.

In the Piedmont province, the soils mostly formed in saprolite that weathered from rocks known locally as the "Carolina slates." These rocks are metamorphosed shale (dominantly argillite), fine grained sandstone, and muscovite mica. Weathered products of these rocks have a high content of silt and very fine sand. As a result, the soils are silt loam, loam, silty clay loam, silty clay, and clay. Georgeville, Herndon, and Nason soils derived from these rocks. These soils have a subsoil that has 30 percent or more silt. A few areas of coarse grained granite rock are in the Carolina slate belt. Pacolet soils formed in the granitic saprolite.

Soils on stream and river flood plains in the Piedmont and Coastal Plain provinces formed in loamy or sandy sediment that washed from the uplands of the Piedmont province. These include Congaree and Toccoa soils, which have little genetic development and are classified as Entisols, and Chewacla soils, which have some genetic development and are classified as Inceptisols.

The parent material in the Coastal Plain province consists of marine-deposited sediment that is dominantly quartz sand and kaolinitic clays in varying proportions. In the Sand Hill area of the Coastal Plain, sandy sediment is predominant. Blanton, Lakeland, Alpin, and Wagram soils formed in this area. Pelion and Ailey soils, however, formed in clayey and loamy sediment that has a high content of kaolin and is low in inherent fertility. In the southern part of the Coastal Plain, the sediment has a higher content of clay and silt in proportion to the content of sand. Goldsboro and Norfolk soils formed in this loamy sediment.

Topography

Topography, or lay of the land, is the difference in height of landforms and has been determined largely by geologic history and the effects of dissection by streams as the streams developed. Topography influences the formation of soils chiefly by its effects on water movement, erosion, and plant cover. Several different soils can form from similar parent material because of the effects of topography.

The soils in the survey area are in three distinct topographical regions: the Piedmont, the Sand Hills, and the Coastal Plain.

In the Piedmont, runoff is less rapid on the gentle slopes, and more soil material forms on the surface. Soil development has been faster than geologic erosion, and the soils are thicker than those soils that formed on moderate to steep slopes on which soil removal by geologic erosion has more closely kept pace with soil development.

In the Sand Hills, the broad ridgetops are nearly level or gently undulating. Few streams dissect the Sand Hills. Runoff is slight, and most of the rainfall passes down through the permeable soil material, thus leaching bases and transporting clays to greater depths. Drainageways have developed in the more sloping part of the Sand Hills, and this same process takes place but is modified by increased runoff.

On the nearly level Coastal Plain, preweathered soil-forming material was deposited as marine sediment. Soils on this landscape are mostly classified in the order of Ultisols and have developed genetic horizons. In level or depressional areas where stream and surface drainage is not well established, the water table is close to the surface and the soils are permanently wet.

Time

The length of time required for a soil to form depends largely upon the intensity of other soil-forming factors. The soils in the Kershaw County area range from young to mature. On the uplands of the Piedmont and on the Coastal Plain, many of the soils have well-developed genetic horizons or layers that are easily recognized. The layers of the subsoil have an accumulation of clay. If the parent material is sandy, little horizonation has taken place. In level or depressional areas, the soils are saturated and have only moderately distinct horizons. On the stream flood plains, the soils are young because the parent material is still being deposited as alluvium; thus, well-defined horizons have not had time to develop.

Living Organisms

The number and kinds of plants and animals that live in and on the soil are determined mainly by the climate and, to lesser extents, the parent material, topography, and age of the soil.

Bacteria, fungi, and other micro-organisms are indispensable in soil formation. They hasten the weathering of minerals and the decomposing of organic matter. Larger plants alter the soil microclimate, furnish organic matter, and transfer chemical elements from the subsoil to the surface layer.

Most of the fungi, bacteria, and other micro-organisms are in the upper few inches of the soil. The activity of earthworms and other small invertebrates is chiefly in the A horizon and upper part of the B horizon. These organisms slowly but continuously mix the soil material. Bacteria and fungi decompose organic matter and release nutrients for plant use.

Animals play a secondary role in soil formation, but their influence is very great. By eating plants, they perform one step in returning plant material to the soil.

Large trees affect soil formation by bringing nutrients up from deep within the soil and by bringing soil material up from varying depths when the tree is blown over. As large roots decay, the openings are filled by material from above.

Climate

Kershaw County has a temperate climate; thus, winters are mild and summers are very warm. Rainfall is ample throughout the growing season.

Climate, particularly precipitation and temperature, affects the physical, chemical, and biological relationships in the soil. The growth and activity of living organisms and the chemical and physical decomposition or weathering of parent material are accelerated by moisture and warm temperatures. Water dissolves and transports minerals and organic matter as it moves down through the layers of soil. It causes the leaching of soluble bases as it percolates through the soil and the translocation or redistribution of less soluble, finer textured, and highly weathered materials. The amount of water that percolates through the soil depends upon the rainfall, relief, permeability of the soil material, and frost-free season.

Rainfall and the temperate climate are responsible for the leaching and removal of soluble materials released through weathering of the rocks that were the original source of the marine sediment. For this reason, most of the soils are strongly acid and have low base saturation. Water movement through the soil is responsible for the clayey and loamy subsoil of the Georgeville and Norfolk soils and for the excessive leaching and clay removal of the coarse textured Lakeland soils. It also causes the clay accumulation in the deep subsoil of the Blanton, Wagram, and Ailey soils.

Morphology of the Soils

If a vertical cut is dug into a soil, several layers or horizons are evident. This differentiation of horizons is the result of many soil-forming processes. These

processes include the accumulation of organic matter, the leaching of soluble salts, the reduction and translocation of iron, the formation of soil structure, and the physical weathering of primary minerals or rocks. Some of these processes continually take place in all soils, but the number of active processes and the degree of their activity vary from one soil to another.

Most soils have four major horizons: A, E, B, and C. These major horizons can be further subdivided by the use of subscripts and letters to indicate changes within one horizon. An example would be the Bt2 horizon, which is a layer within the B horizon that has translocated clay.

The A horizon is the surface layer and has the largest accumulation of organic matter. If the soil has been cleared and plowed, this layer is the Ap horizon. Pantego and Cantey soils are examples of soils that have a distinctive, dark A horizon.

The E horizon, which is below the A horizon, is the zone of maximum leaching, or eluviation, of clay and iron in the profile. Normally, the E horizon is the lightest colored horizon in the soil. It is well expressed in Wagram and Ailey soils.

The B horizon, which is below the A or E horizon, is commonly called the subsoil. It is the horizon of maximum accumulation, or illuviation, of the clay, iron, aluminum, or other compounds that have been leached from the A horizon. Norfolk, Persanti, Pelion, and Herndon soils are among the soils that have a well expressed B horizon.

The C horizon is made up of material that has been little altered by the soil forming processes but can be modified by weathering. Some soils, such as Lakeland soils, have not formed a B horizon, and the C horizon lies immediately under the A horizon.

References

(1) American Association of State Highway and Transportation Officials. 1982. Standard specifications for highway materials and methods of sampling and testing. Ed. 13, 2 vol., illus.

(2) American Society for Testing and Materials. 1986. Standard test method for classification of soils for engineering purposes. ASTM Stand. D 2487.

(3) Portland Cement Association. 1962. PCA soil primer. 52 pp., illus.

(4) United States Department of Agriculture. 1951 (Being revised). Soil survey manual. U.S. Dep. Agric. Handb. 18, 503 pp., illus. (Supplements replacing pp. 173-188 issued May 1962.)

(5) United States Department of Agriculture. 1961. Land capability classification. U.S. Dep. Agric. Handb. 210, 21 pp.

(6) United States Department of Agriculture. 1975. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 436, 754 pp., illus.

(7) United States Department of Agriculture. 1978. Predicting rainfall erosion losses—a guide to conservation planning. Soil Conserv. Serv., U.S. Dep. Agric. Handb. 537.

Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	9 to 12
Very high	more than 12

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the total cation-exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels, i.e., clay coating, clay skin.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15 to 38 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Conservation tillage. A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate

pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.
Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.
Soft.—When dry, breaks into powder or individual grains under very slight pressure.
Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or resting grazingland for a prescribed period.

Dense layer (in tables). A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:
Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.
Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.
Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.
Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.
Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.
Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.
Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and

nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.
Erosion (geologic)—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.
Erosion (accelerated)—Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, such as fire, that exposes the surface.

Excess fines (in tables). Excess silt and clay are in the soil. The soil is not a source of gravel or sand for construction purposes.

Fast intake (in tables). The movement of water into the soil is rapid.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fine textured soil. Sandy clay, silty clay, and clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:
O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.
A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.
B horizon.—The mineral horizon below an O, A, or E horizon. The B horizon is, in part, a layer of transition from the overlying horizon to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those in the A horizon; or a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.
C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the

properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Arabic numeral 2 precedes the letter C.

R layer.—Consolidated rock (unweathered bedrock) beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Infiltration. The downward entry of water into the immediate surface of soil or other material. This contrasts with percolation, which is movement of water through soil layers or material.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many*; size—*fine, medium,* and *coarse*; and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water to move through the profile. Permeability is measured as the number of inches per hour that water moves through the saturated soil. Terms describing permeability are:

Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Subsurface tunnels or pipelike cavities are formed by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plinthite. The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor filter (in tables). Because of rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of the acidity or alkalinity of a soil expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH value are—

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Medium acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Mildly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saprolite (soil science). Unconsolidated, residual material underlying the soil and grading to hard bedrock below.

Sedimentary rock. Rock made up of particles

deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally it is indicative of an old weathered surface. In a cross section, thickness of the line can be one fragment or more. It generally overlies material that weathered in place, and it is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in

color and lower in organic matter content than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed on the contour or at a slight angle to the contour across sloping soils. The terrace intercepts surface runoff, so that water soaks into the soil or flows slowly to a prepared outlet.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). An otherwise suitable soil material that is too thin for the specified use.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Weathering. All physical and chemical changes produced by atmospheric agents in rocks or other deposits at or near the earth's surface. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. This contrasts with poorly graded soil.

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Data recorded in the period 1951-78 at Camden, South Carolina]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average daily	2 years in 10 will have-- Maximum temperature higher than--	2 years in 10 will have-- Minimum temperature lower than--	Average number of growing degree days*	Average	2 years in 10 will have-- Less than--	2 years in 10 will have-- More than--	Average number of days with 0.10 inch or more	Average snowfall
	°F	°F	°F	°F	°F	Units	In	In	In		In
January----	54.4	29.5	41.9	77	10	55	4.07	2.44	5.52	8	.2
February---	57.9	30.6	44.2	79	12	54	3.53	1.71	5.10	7	.6
March------	65.4	37.5	51.4	86	20	140	4.38	2.70	5.88	8	.1
April------	75.1	46.2	60.7	91	29	321	3.30	1.59	4.77	5	.0
May--------	82.0	55.6	68.9	95	37	586	3.59	1.67	5.22	6	.0
June-------	87.5	63.4	75.5	100	48	765	4.56	1.97	6.76	7	.0
July-------	90.3	67.6	79.0	100	56	899	5.80	2.38	8.69	9	.0
August-----	89.2	66.9	78.1	98	55	871	4.40	2.22	6.30	7	.0
September--	84.1	60.7	72.4	96	44	672	3.43	1.33	5.19	5	.0
October----	74.6	47.8	61.2	89	27	356	2.70	.66	4.34	4	.0
November---	65.5	37.2	51.4	83	19	109	2.48	.99	3.77	4	.0
December---	56.9	30.7	43.8	76	12	48	3.40	1.88	4.76	7	.0
Yearly:											
Average--	73.6	47.8	60.7	---	---	---	---	---	---	---	---
Extreme--	---	---	---	101	8	---	---	---	---	---	---
Total----	---	---	---	---	---	4,876	45.64	38.14	52.79	77	.9

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (50 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Data recorded in the period 1951-78 at Camden, South Carolina]

Probability	Temperature		
	24° F or lower	28° F or lower	32° F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	March 27	April 14	April 19
2 years in 10 later than--	March 19	March 30	April 15
5 years in 10 later than--	March 3	March 20	April 5
First freezing temperature in fall:			
1 year in 10 earlier than--	November 2	October 26	October 16
2 years in 10 earlier than--	November 9	October 31	October 20
5 years in 10 earlier than--	November 22	November 10	October 29

TABLE 3.--GROWING SEASON

[Data recorded in the period 1951-78 at Camden, South Carolina]

Probability	Daily minimum temperature during growing season		
	Higher than 24° F	Higher than 28° F	Higher than 32° F
	Days	Days	Days
9 years in 10	234	214	186
8 years in 10	244	221	193
5 years in 10	263	234	206
2 years in 10	282	247	219
1 year in 10	291	254	226

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Kershaw County Area	Lancaster County Area	Total-- Area	Total-- Extent
		Acres	Acres	Acres	Pct
AeB	Ailey sand, 0 to 6 percent slopes	17,680	1,840	19,520	3.9
AeC	Ailey sand, 6 to 10 percent slopes	14,180	530	14,710	2.9
ApB	Alpin sand, 0 to 6 percent slopes	20,310	1,780	22,090	4.4
ApC	Alpin sand, 6 to 10 percent slopes	1,970	0	1,970	0.4
ApD	Alpin sand, 10 to 15 percent slopes	1,260	0	1,260	0.3
AtA	Altavista loam, 0 to 2 percent slopes	4,350	40	4,390	0.9
BaB	Blanton sand, 0 to 6 percent slopes	39,410	1,230	40,640	8.1
BaC	Blanton sand, 6 to 10 percent slopes	5,330	690	6,020	1.2
Ca	Cantey loam	2,120	0	1,120	0.4
CeB	Cecil sandy loam, 2 to 6 percent slopes	2,070	1,140	3,210	0.6
CeC	Cecil sandy loam, 6 to 10 percent slopes	5,750	910	6,660	1.3
Ch	Chewacla loam	18,970	1,700	20,670	4.1
Co	Congaree loam	8,960	60	9,020	1.8
Do	Dorovan muck	6,010	0	6,010	1.2
DuB	Durham loamy sand, 2 to 6 percent slopes	2,660	750	3,410	0.7
DuC	Durham loamy sand, 6 to 10 percent slopes	3,380	260	3,640	0.7
FaA	Faceville loamy sand, 0 to 2 percent slopes	200	10	210	*
FaB	Faceville loamy sand, 2 to 6 percent slopes	1,930	0	1,930	0.4
GeB	Georgeville loam, 2 to 6 percent slopes	4,300	530	4,830	1.0
GeC	Georgeville loam, 6 to 10 percent slopes	6,700	1,130	7,830	1.6
GoA	Goldsboro loamy sand, 0 to 2 percent slopes	9,870	100	9,970	2.0
Gr	Grady loam	1,260	0	1,260	0.3
GvB	Greenville sandy loam, 2 to 6 percent slopes	200	0	200	*
GvC	Greenville sandy loam, 6 to 10 percent slopes	360	0	360	0.1
HeB	Helena sandy loam, 2 to 6 percent slopes	390	0	390	0.1
HrB	Herndon loam, 2 to 6 percent slopes	5,670	650	6,320	1.3
HrC	Herndon loam, 6 to 10 percent slopes	2,530	10	2,540	0.5
IeB	Iredell loam, 1 to 6 percent slopes	210	0	210	*
Jo	Johnston loam	16,780	10	16,790	3.3
LaB	Lakeland sand, 0 to 6 percent slopes	85,920	3,470	89,390	17.8
LaC	Lakeland sand, 6 to 10 percent slopes	5,720	530	6,250	1.2
LaD	Lakeland sand, 10 to 15 percent slopes	3,470	200	3,670	0.7
LuB	Lugoff gravelly loamy sand, 2 to 6 percent slopes	910	0	910	0.2
LuC	Lugoff gravelly loamy sand, 6 to 10 percent slopes	320	0	320	0.1
LuD	Lugoff gravelly loamy sand, 10 to 15 percent slopes	220	0	220	*
MaB2	Madison sandy clay loam, 2 to 6 percent slopes, eroded	1,590	600	2,190	0.4
MaC2	Madison sandy clay loam, 6 to 10 percent slopes, eroded	13,920	4,890	18,810	3.7
MaE2	Madison sandy clay loam, 10 to 25 percent slopes, eroded	7,140	4,390	11,530	2.3
MaF2	Madison sandy clay loam, 25 to 60 percent slopes, eroded	2,430	300	2,730	0.5
NaC	Nason loam, 6 to 10 percent slopes	2,690	120	2,810	0.6
NaE	Nason loam, 10 to 25 percent slopes	12,980	30	13,010	2.6
NoA	Norfolk loamy sand, 0 to 2 percent slopes	6,450	0	6,450	1.3
NoB	Norfolk loamy sand, 2 to 6 percent slopes	11,660	0	11,660	2.3
PaC2	Pacolet sandy clay loam, 6 to 10 percent slopes, eroded	240	270	510	0.1
PaD2	Pacolet sandy clay loam, 10 to 15 percent slopes, eroded	1,490	690	2,180	0.4
PaE2	Pacolet sandy clay loam, 15 to 25 percent slopes, eroded	3,740	0	3,740	0.7
Pe	Pantego loam	8,860	0	8,860	1.8
Pg	Pantego loam, overwash	410	0	410	0.1
PnA	Pelion loamy sand, 0 to 2 percent slopes	6,200	0	6,200	1.2
PnB	Pelion loamy sand, 2 to 6 percent slopes	20,420	250	20,670	4.1
PnC	Pelion loamy sand, 6 to 10 percent slopes	4,530	0	4,530	0.9
PsA	Persanti sandy loam, 0 to 2 percent slopes	7,810	0	7,810	1.6
PxE	Poindexter silt loam, 10 to 25 percent slopes	1,620	0	1,620	0.3
Qz	Quartzipsamments, gently rolling	1,040	10	1,050	0.2
Ra	Rains sandy loam	1,070	30	1,100	0.2
RoD	Rion gravelly sandy loam, 6 to 15 percent slopes	2,980	0	2,980	0.6
RoF	Rion gravelly sandy loam, 15 to 40 percent slopes	5,260	0	5,260	1.0
SuA	Summerton sandy loam, 0 to 2 percent slopes	640	0	640	0.1
Tc	Toccoa-Cartecay complex	910	20	930	0.2
To	Toccoa sandy loam	420	0	420	0.1
VaC	Vaucluse loamy sand, 6 to 10 percent slopes	3,980	200	4,180	0.8
VaD	Vaucluse loamy sand, 10 to 15 percent slopes	2,000	0	2,000	0.4

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Kershaw County Area	Lancaster County Area	Total--	
				Area	Extent
		Acres	Acres	Acres	Pct
WaB	Wagram sand, 0 to 6 percent slopes	28,790	460	29,250	5.8
We	Wehadkee silt loam	5,530	0	5,530	1.1
WkA	Wickham fine sandy loam, 0 to 2 percent slopes	770	0	770	0.2
WkB	Wickham fine sandy loam, 2 to 6 percent slopes	510	0	510	0.1
WkD	Wickham fine sandy loam, 6 to 15 percent slopes	80	0	80	*
WnB	Winnsboro loam, 2 to 6 percent slopes	610	170	780	0.2
WnC	Winnsboro loam, 6 to 10 percent slopes	860	0	860	0.2
	Water	2,000	0	2,000	0.4
	Total	473,000	30,000	503,000	100.0

* Less than 0.1 percent.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Map symbol and soil name	Land capability	Corn	Soybeans	Cotton lint	Wheat	Oats	Improved bermuda-grass	Bahiagrass
		Bu	Bu	Lbs	Bu	Bu	AUM*	AUM*
AeB---- Ailey	IIIs	50	20	400	35	---	6.0	6.0
AeC---- Ailey	IVs	---	---	---	---	---	5.0	5.0
ApB---- Alpin	IVs	---	---	---	---	---	8	7
ApC---- Alpin	VIs	---	---	---	---	---	8	7
ApD---- Alpin	VIIs	---	---	---	---	---	7.5	6.5
AtA---- Altavista	IIw	120	45	550	55	---	8.5	7.5
BaB---- Blanton	IIIs	60	25	---	40	---	8.0	6.5
BaC---- Blanton	IVs	50	20	---	---	---	7.5	6.5
Ca---- Cantey	IIIw	85	35	---	---	---	---	8.5
CeB---- Cecil	IIe	95	25	750	---	90	---	6.5
CeC---- Cecil	IIIe	90	20	700	45	85	---	6.5
Ch---- Chewacla	IIIw	100	35	---	40	70	---	---
Co---- Congaree	IIIw	125	40	---	50	75	10.0	9.0
Do---- Dorovan	VIIw	---	---	---	55	---	---	---
DuB---- Durham	IIe	85	30	700	50	75	8.0	7.0
DuC---- Durham	IIIe	75	20	600	45	70	8.0	7.0
FaA---- Faceville	I	115	45	875	50	---	10.0	7.0
FaB---- Faceville	IIe	115	45	875	45	---	10.0	7.0
GeB---- Georgeville	IIe	95	30	700	45	80	---	4.5

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Cotton lint	Wheat	Oats	Improved bermuda-grass	Bahiagrass
		Bu	Bu	Lbs	Bu	Bu	AUM*	AUM*
GeC--- Georgeville	IIIe	85	25	625	35	70	---	4.0
GoA--- Goldsboro	IIw	125	45	700	60	---	8.0	8.0
Gr--- Grady	IVw	65	30	---	---	---	---	6.0
GvB--- Greenville	IIe	95	35	800	---	65	11.0	6.0
GvC--- Greenville	IVe	---	---	---	---	---	8.5	5.0
HeB--- Helena	IIe	80	---	575	---	65	---	6.0
HrB--- Herndon	IIe	95	35	700	50	80	---	6.0
HrC--- Herndon	IIIe	85	30	600	45	70	---	6.0
IeB--- Iredell	IIe	65	30	900	40	65	7.0	---
Jo--- Johnston	VIIw	---	---	---	---	---	---	---
LaB--- Lakeland	IVs	55	20	---	30	20	7.0	6.0
LaC--- Lakeland	VIs	---	---	---	---	---	6.5	5.5
LaD--- Lakeland	VIIs	---	---	---	---	---	6.0	5.0
LuB--- Lugoff	IIIe	80	25	---	45	---	9.0	7.0
LuC--- Lugoff	IVe	70	20	---	40	---	8.0	6.5
LuD--- Lugoff	VIe	---	---	---	---	---	7.0	5.5
MaB2--- Madison	IIIe	70	35	500	40	70	---	4.5
MaC2--- Madison	IVe	60	20	---	30	60	---	4.0
MaE2--- Madison	VIe	---	---	---	---	---	---	---
MaF2--- Madison	VIIe	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Cotton lint	Wheat	Oats	Improved bermuda-grass	Bahiagrass
		Bu	Bu	Lbs	Bu	Bu	AUM*	AUM*
NaC---------- Nason	IIIe	85	30	---	45	65	---	---
NaE---------- Nason	VIe	---	---	---	---	---	---	---
NoA---------- Norfolk	I	110	45	700	50	---	8.0	7.0
NoB---------- Norfolk	IIe	100	35	650	45	---	8.0	7.0
PaC2---------- Pacolet	IVe	50	30	---	---	---	---	5.0
PaD2---------- Pacolet	VIe	---	---	---	---	---	---	---
PaE2---------- Pacolet	VIIe	---	---	---	---	---	---	---
Pe, Pg---------- Pantego	IIIw	135	40	---	50	70	---	5.0
PnA---------- Pelion	IIw	70	30	550	---	---	8.0	7.0
PnB---------- Pelion	IIe	60	25	500	---	---	8.0	6.0
PnC---------- Pelion	IVe	50	20	400	---	---	7.0	6.0
PsA---------- Persanti	IIw	100	40	700	---	---	9.0	8.0
PxE---------- Poindexter	VIe	---	---	---	---	---	---	---
Qz---------- Quartzipsamments	VIs	---	---	---	---	---	6.0	5.5
Ra---------- Rains	IIIw	110	40	450	45	70	---	10.0
RoD---------- Rion	IVe	65	25	500	---	---	6.0	4.5
RoF---------- Rion	VIIe	---	---	---	---	---	---	---
SuA---------- Summerton	I	100	40	850	---	---	10.0	9.0
Tc---------- Toccoa-Cartecay	IIIw	88	---	---	---	---	---	5.0
To---------- Toccoa	IIw	90	---	900	---	---	---	5.0

See footnote at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Map symbol and soil name	Land capability	Corn	Soybeans	Cotton lint	Wheat	Oats	Improved bermuda-grass	Bahiagrass
		Bu	Bu	Lbs	Bu	Bu	AUM*	AUM*
VaC--Vaucluse	IIIe	60	20	400	30	50	7.0	6.0
VaD--Vaucluse	IVe	55	15	350	---	40	7.0	6.0
WaB--Wagram	IIs	75	25	550	40	---	8.5	8.0
We--Wehadkee	VIw	---	---	---	---	---	---	---
WkA--Wickham	I	120	45	800	50	80	8.5	8.5
WkB--Wickham	IIe	115	40	750	45	80	8.5	8.5
WkD--Wickham	IVe	70	---	500	---	60	7.0	7.0
WnB--Winnsboro	IIe	85	35	700	45	---	7.0	6.0
WnC--Winnsboro	IIIe	75	30	600	40	---	6.5	5.5

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

TABLE 6.--CAPABILITY CLASSES AND SUBCLASSES

[Miscellaneous areas are excluded. Absence of an entry indicates no acreage]

Class	Total acreage	Major management concerns (Subclass)		
		Erosion (e)	Wetness (w)	Soil problem (s)
		Acres	Acres	Acres
I	8,070	---	---	---
II	112,670	54,120	29,300	29,250
III	134,380	31,620	42,600	60,160
IV	163,060	29,570	1,260	132,210
V	---	---	---	---
VI	43,360	28,560	5,530	9,270
VII	39,460	11,730	22,800	4,930
VIII	---	---	---	---

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
AeB, AeC---------- Ailey	4s	Slight	Moderate	Moderate	--------	Longleaf pine-------	70	Longleaf pine.
ApB, ApC, ApD------ Alpin	3s	Slight	Moderate	Moderate	Slight	Loblolly pine-------	85	Longleaf pine.
						Longleaf pine-------	70	
						Turkey oak----------	---	
						Post oak------------	---	
						Blackjack oak-------	---	
						Bluejack oak--------	---	
AtA---------- Altavista	2w	Slight	Moderate	Slight	--------	Loblolly pine-------	91	Loblolly pine,
						Longleaf pine-------	84	yellow poplar,
						Shortleaf pine------	77	black walnut,
						Sweetgum------------	84	sweetgum, American
						White oak-----------	---	sycamore,
						Red maple-----------	---	cherrybark oak.
						Yellow-poplar-------	---	
						Southern red oak----	---	
						Northern red oak----	---	
						Water oak-----------	---	
BaB, BaC---------- Blanton	3s	Slight	Moderate	Moderate	Slight	Loblolly pine-------	80	Loblolly pine,
						Longleaf pine-------	70	longleaf pine.
						Bluejack oak--------	---	
						Turkey oak----------	---	
						Southern red oak----	---	
						Live oak------------	---	
Ca---------- Cantey	2w	Slight	Severe	Severe	Slight	Loblolly pine-------	90	Loblolly pine,
						Sweetgum------------	85	sweetgum.
						Water oak-----------	---	
CeB, CeC---------- Cecil	3o	Slight	Slight	Slight	--------	Eastern white pine--	80	Eastern white pine,
						Loblolly pine-------	80	loblolly pine,
						Shortleaf pine------	69	yellow poplar.
						Virginia pine-------	73	
						Black oak-----------	66	
						Northern red oak----	82	
						Post oak------------	65	
						Scarlet oak---------	80	
Ch---------- Chewacla	1w	Slight	Moderate	Slight	--------	Loblolly pine-------	96	Loblolly pine,
						Yellow-poplar-------	100	American sycamore,
						American sycamore---	---	yellow poplar,
						Sweetgum------------	97	sweetgum, green
						Water oak-----------	86	ash.
						Eastern cottonwood--	---	
						Green ash-----------	---	
						Southern red oak----	---	

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
Co---------- Congaree	1o	Slight	Slight	Slight	Slight	Sweetgum----------	100	Loblolly pine, yellow poplar, American sycamore, black walnut, cherrybark oak, eastern cottonwood, sweetgum.
						Yellow poplar-------	107	
						Cherrybark oak------	107	
						Loblolly pine-------	90	
						Eastern cottonwood--	107	
						American sycamore---	89	
						Black walnut--------	100	
						Scarlet oak---------	100	
						Willow oak----------	95	
Do---------- Dorovan	4w	Slight	Severe	Severe	--------	Blackgum----------	70	Baldcypress.
						Sweetbay----------	---	
						Baldcypress---------	---	
						Swamp tupelo--------	---	
						Green ash-----------	---	
DuB, DuC---------- Durham	3o	Slight	Slight	Slight	--------	Loblolly pine-------	80	Loblolly pine, yellow poplar.
						Post oak----------	70	
						Shortleaf pine------	72	
						Southern red oak----	80	
						Sweetgum----------	80	
						White oak-----------	70	
						Yellow poplar-------	80	
FaA, FaB---------- Faceville	3o	Slight	Slight	Slight	--------	Loblolly pine-------	82	Loblolly pine.
						Longleaf pine-------	65	
GeB, GeC---------- Georgeville	3o	Slight	Slight	Slight	Slight	Loblolly pine-------	81	Loblolly pine, Virginia pine, eastern redcedar, black walnut, yellow poplar.
						Longleaf pine-------	67	
						Shortleaf pine------	63	
						White oak-----------	69	
						Scarlet oak---------	70	
						Southern red oak----	67	
GoA---------- Goldsboro	2w	Slight	Moderate	Slight	--------	Loblolly pine-------	90	Loblolly pine, yellow poplar, American sycamore, sweetgum.
						Longleaf pine-------	93	
						Sweetgum----------	77	
						Southern red oak----	90	
						White oak-----------	---	
						Water oak-----------	---	
						Red maple-----------	---	
Gr---------- Grady	2w	Slight	Moderate	Moderate	--------	Loblolly pine-------	90	Loblolly pine.
						Sweetgum----------	90	
GvB, GvC---------- Greenville	3o	Slight	Slight	Slight	Slight	Loblolly pine-------	82	Loblolly pine, longleaf pine.
						Longleaf pine-------	70	
HeB---------- Helena	3w	Slight	Moderate	Slight	--------	Loblolly pine-------	80	Loblolly pine, Virginia pine, yellow poplar.
						Shortleaf pine------	63	
						White oak-----------	64	
						Yellow poplar-------	87	
HrB, HrC---------- Herndon	3o	Slight	Slight	Slight	Slight	Loblolly pine-------	80	Loblolly pine, Virginia pine, eastern redcedar, yellow poplar.
						Shortleaf pine------	61	
						White oak-----------	65	
						Southern red oak----	72	
						Yellow poplar-------	91	

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
IeB---------- Iredell	4c	Slight	Moderate	Moderate	--------	Loblolly pine-------	67	Loblolly pine, eastern redcedar.
						Shortleaf pine------	58	
						Post oak----------	44	
						White oak----------	47	
Jo---------- Johnston	1w	Slight	Severe	Severe	--------	Water tupelo--------	---	Loblolly pine, baldcypress, American sycamore, sweetgum, green ash.
						Swamp tupelo--------	---	
						Water oak----------	---	
						Pond pine----------	---	
						Baldcypress---------	---	
						Loblolly pine-------	97	
LaB, LaC, LaD------ Lakeland	4s	Slight	Moderate	Moderate	Slight	Longleaf pine-------	75	Longleaf pine.
						Loblolly pine-------	75	
						Longleaf pine-------	60	
						Turkey oak----------	---	
						Blackjack oak-------	---	
						Post oak----------	---	
LuB, LuC, LuD------ Lugoff	3o	Slight	Slight	Slight	Slight	Loblolly pine-------	80	Loblolly pine, yellow poplar, longleaf pine.
						Longleaf pine-------	60	
MaB2, MaC2, MaE2, MaF2---------- Madison	4c	Moderate	Moderate	Moderate	--------	Loblolly pine-------	72	Eastern redcedar, loblolly pine, Virginia pine.
						Longleaf pine-------	60	
						Virginia pine-------	60	
NaC---------- Nason	3o	Slight	Slight	Slight	Slight	Northern red oak----	66	Loblolly pine, eastern white pine.
						Virginia pine-------	69	
						Shortleaf pine------	66	
						Loblolly pine-------	80	
NaE---------- Nason	3r	Moderate	Moderate	Slight	Slight	Northern red oak----	66	Loblolly pine, eastern white pine.
						Virginia pine-------	69	
						Shortleaf pine------	66	
						Loblolly pine-------	80	
NoA, NoB---------- Norfolk	2o	Slight	Slight	Slight	--------	Loblolly pine-------	86	Loblolly pine.
						Longleaf pine-------	68	
PaC2, PaD2--------- Pacolet	4c	Moderate	Moderate	Moderate	--------	Loblolly pine-------	70	Loblolly pine, shortleaf pine, yellow poplar.
						Shortleaf pine------	60	
						Yellow-poplar-------	80	
PaE2---------- Pacolet	4c	Severe	Severe	Severe	--------	Loblolly pine-------	78	Loblolly pine, shortleaf pine, yellow poplar.
						Shortleaf pine------	70	
						Yellow poplar-------	90	
Pe, Pg---------- Pantego	1w	Slight	Severe	Severe	--------	Loblolly pine-------	98	Loblolly pine, sweetgum, American sycamore, water tupelo.
						Pond pine----------	73	
						Baldcypress---------	---	
						Water tupelo--------	---	
						Water oak----------	---	

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
PnA, PnB, PnC----- Pelion	3w	Slight	Slight	Slight	Moderate	Loblolly pine-------	80	Loblolly pine.
PsA----------- Persanti	2w	Slight	Moderate	Moderate	Slight	Loblolly pine-------	90	Loblolly pine.
						Shortleaf pine------	80	sweetgum,
						Water oak----------	90	yellow poplar.
						Sweetgum-----------	90	
PxE----------- Poindexter	4r	Moderate	Moderate	Slight	Slight	Longleaf pine-------	60	Longleaf pine.
						Virginia pine-------	65	
						Southern red oak----	60	
						Loblolly pine-------	70	
Qz----------- Quartzipsamments	4s	Slight	Moderate	Moderate	Slight	Loblolly pine-------	75	Loblolly pine.
Ra----------- Rains	2w	Slight	Severe	Severe	--------	Loblolly pine-------	94	Loblolly pine,
						Sweetgum-----------	90	sweetgum,
								American sycamore.
RoD----------- Rion	3o	Slight	Slight	Slight	Slight	Loblolly pine-------	80	Loblolly pine,
						Post oak-----------	65	shortleaf pine,
						Shortleaf pine------	70	yellow poplar.
						Southern red oak----	80	
						Sweetgum-----------	80	
						White oak----------	70	
						Yellow poplar-------	90	
RoF----------- Rion	3r	Moderate	Moderate	Moderate	Slight	Loblolly pine-------	80	Loblolly pine,
						Post oak-----------	65	shortleaf pine,
						Shortleaf pine------	70	yellow poplar.
						Southern red oak----	80	
						Sweetgum-----------	80	
						White oak----------	70	
						Yellow poplar-------	90	
SuA----------- Summerton	3o	Slight	Slight	Slight	Slight	Loblolly pine-------	80	Loblolly pine.
						Longleaf pine-------	65	
Tc:								
Toccoa----------	1o	Slight	Slight	Slight	Slight	Loblolly pine-------	90	Loblolly pine,
						Yellow poplar-------	107	yellow poplar,
						Sweetgum-----------	100	American sycamore,
						Southern red oak----	---	cherrybark oak.
Cartecay----------	2w	Slight	Moderate	Slight	--------	Loblolly pine-------	95	Loblolly pine,
						Sweetgum-----------	95	sweetgum, yellow
						Yellow poplar-------	105	poplar, water oak,
						Water oak----------	85	American sycamore,
						Southern red oak----	85	eastern cottonwood.
To----------- Toccoa	1o	Slight	Slight	Slight	Slight	Loblolly pine-------	90	Loblolly pine,
						Yellow poplar-------	107	yellow poplar,
						Sweetgum-----------	100	American sycamore,
						Southern red oak----	---	cherrybark oak.
VaC, VaD---------- Vaucluse	3o	Slight	Slight	Slight	Moderate	Loblolly pine-------	76	Loblolly pine.
						Shortleaf pine------	56	
						Longleaf pine-------	---	

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Map symbol and soil name	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
WaB---------- Wagram	3s	Slight	Moderate	Moderate	---	Loblolly pine--- Longleaf pine---	82 67	Loblolly pine, longleaf pine.
We---------- Wehadkee	1w	Slight	Severe	Severe	---	Loblolly pine--- Sweetgum--- Yellow poplar--- Willow oak--- Green ash--- Water oak--- White ash---	102 93 98 90 96 86 88	Loblolly pine, American sycamore, yellow poplar, green ash, sweetgum, eastern cottonwood, cherrybark oak.
WkA, WkB, WkD------ Wickham	2o	Slight	Slight	Slight	---	Loblolly pine--- Yellow poplar--- Southern red oak----	90 100 ---	Loblolly pine, yellow poplar.
WnB, WnC---------- Winnsboro	4o	Slight	Slight	Slight	Slight	Loblolly pine--- Shortleaf pine--- Virginia pine--- Post oak--- Red maple--- Southern red oak---- Sweetgum--- White oak--- Yellow poplar---	73 63 63 55 70 84 78 69 88	Eastern redcedar, loblolly pine.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe"]

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AeB---- Ailey	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty.
AeC---- Ailey	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: slope, droughty.
ApB---- Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty, too sandy.
ApC, ApD---- Alpin	Severe: too sandy.	Severe: too sandy.	Severe: too sandy, slope.	Severe: too sandy.	Severe: droughty, too sandy.
AtA---- Altavista	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
BaB---- Blanton	Severe: too sandy.	Severe: too sandy.	Moderate: slope.	Severe: too sandy.	Severe: droughty.
BaC---- Blanton	Severe: too sandy.	Severe: too sandy.	Severe: slope.	Severe: too sandy.	Severe: droughty.
Ca---- Cantey	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
CeB---- Cecil	Slight----	Slight----	Moderate: slope, small stones.	Slight----	Slight.
CeC---- Cecil	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----	Slight.
Ch---- Chewacla	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Co---- Congaree	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: flooding.
Do---- Dorovan	Severe: flooding, ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding, flooding.	Severe: ponding, excess humus.	Severe: ponding, flooding, excess humus.
DuB---- Durham	Slight----	Slight----	Moderate: slope.	Slight----	Moderate: droughty.
DuC---- Durham	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----	Moderate: droughty, slope.
FaA---- Faceville	Slight----	Slight----	Slight----	Slight----	Slight.
FaB---- Faceville	Slight----	Slight----	Moderate: slope.	Slight----	Slight.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
GeB---- Georgeville	Slight----	Slight----	Moderate: slope, small stones.	Slight----	Slight.
GeC---- Georgeville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----	Moderate: slope.
GoA---- Goldsboro	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Slight----	Slight.
Gr---- Grady	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
GvB---- Greenville	Slight----	Slight----	Moderate: slope.	Slight----	Slight.
GvC---- Greenville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----	Moderate: slope.
HeB---- Helena	Moderate: wetness, percs slowly.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness.	Moderate: wetness.
HrB---- Herndon	Slight----	Slight----	Moderate: slope.	Severe: erodes easily.	Slight.
HrC---- Herndon	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
IeB---- Iredell	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
Jo---- Johnston	Severe: flooding, ponding.	Severe: ponding.	Severe: ponding, flooding.	Severe: ponding.	Severe: ponding, flooding.
LaB---- Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
LaC, LaD---- Lakeland	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.	Moderate: droughty, slope, too sandy.
LuB---- Lugoff	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.	Severe: small stones.
LuC, LuD---- Lugoff	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Severe: small stones.	Severe: small stones.
MaB2---- Madison	Slight----	Slight----	Moderate: slope, small stones.	Slight----	Slight.
MaC2---- Madison	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----	Moderate: slope.
MaE2---- Madison	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MaF2---------- Madison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
NaC---------- Nason	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
NaE---------- Nason	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
NoA---------- Norfolk	Slight----------	Slight----------	Slight----------	Slight----------	Moderate: droughty.
NoB---------- Norfolk	Slight----------	Slight----------	Moderate: slope.	Slight----------	Moderate: droughty.
PaC2, PaD2---------- Pacolet	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight----------	Moderate: slope.
PaE2---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
Pe, Pg---------- Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
PnA, PnB---------- Pelion	Severe: wetness.	Moderate: wetness, percs slowly.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, droughty.
PnC---------- Pelion	Severe: wetness.	Moderate: slope, wetness, percs slowly.	Severe: slope, wetness.	Moderate: wetness.	Moderate: wetness, droughty, slope.
PsA---------- Persanti	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Moderate: wetness, percs slowly.	Slight----------	Slight.
PxE---------- Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Qz---------- Quartzipsamments	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: droughty.
Ra---------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
RoD---------- Rion	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight----------	Moderate: small stones, large stones, slope.
RoF---------- Rion	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
SuA---------- Summerton	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: percs slowly.	Slight----------	Slight.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Map symbol and soil name	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Tc:					
Toccoa	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
Cartecay	Severe: flooding, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
To:					
Toccoa	Severe: flooding.	Slight	Moderate: flooding.	Slight	Moderate: flooding.
VaC, VaD:					
Vaucluse	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: droughty, slope.
WaB:					
Wagram	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Severe: too sandy.	Moderate: droughty, too sandy.
We:					
Wehadkee	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: wetness, flooding.
WkA:					
Wickham	Slight	Slight	Slight	Slight	Slight.
WkB:					
Wickham	Slight	Slight	Moderate: slope.	Slight	Slight.
WkD:					
Wickham	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.
WnB:					
Winnsboro	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight	Slight.
WnC:					
Winnsboro	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight	Moderate: slope.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor"]

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
AeB---Ailey	Poor	Fair	Fair	Poor	Poor	Poor	Very poor.	Fair	Poor	Very poor.
AeC---Ailey	Poor	Poor	Fair	Poor	Poor	Very poor.	Very poor.	Fair	Poor	Very poor.
ApB, ApC, ApD---Alpin	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
AtA---Altavista	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
BaB, BaC---Blanton	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Ca---Cantey	Fair	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
CeB---Cecil	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
CeC---Cecil	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Ch---Chewacla	Poor	Fair	Fair	Good	Good	Poor	Very poor.	Fair	Good	Very poor.
Co---Congaree	Good	Good	Good	Good	Good	Fair	Fair	Good	Good	Fair.
Do---Dorovan	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	Good	Good	Very poor.	Very poor.	Good.
DuB---Durham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
DuC---Durham	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
FaA---Faceville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
FaB---Faceville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GeB, GeC---Georgeville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
GoA---Goldsboro	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
Gr---Grady	Poor	Fair	Fair	Fair	Fair	Good	Good	Fair	Fair	Good.
GvB---Greenville	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
GvC---------- Greenville	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HeB---------- Helena	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
HrB---------- Herndon	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
HrC---------- Herndon	Fair	Good	Fair	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
IeB---------- Iredell	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Jo---------- Johnston	Very poor.	Poor	Poor	Poor	Poor	Good	Good	Poor	Poor	Good.
LaB, LaC, LaD------ Lakeland	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
LuB---------- Lugoff	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
LuC, LuD---------- Lugoff	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MaB2---------- Madison	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
MaC2---------- Madison	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
MaE2---------- Madison	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Fair	Very poor.
MaF2---------- Madison	Very poor.	Poor	Poor	Poor	Poor	Very poor.	Very poor.	Poor	Poor	Very poor.
NaC---------- Nason	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
NaE---------- Nason	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
NoA, NoB---------- Norfolk	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
PaC2---------- Pacolet	Poor	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
PaD2---------- Pacolet	Very poor.	Poor	Very poor.	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Very poor.
PaE2---------- Pacolet	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Pe, Pg---------- Pantego	Fair	Good	Good	Good	Good	Poor	Fair	Good	Good	Poor.

TABLE 9.--WILDLIFE HABITAT--Continued

Map symbol and soil name	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
PnA---------- Pelion	Fair	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PnB, PnC---------- Pelion	Fair	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
PsA---------- Persanti	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
PxE---------- Poindexter	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Qz---------- Quartzipsamments	Poor	Fair	Fair	Poor	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
Ra---------- Rains	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good.
RoD---------- Rion	Poor	Fair	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
RoF---------- Rion	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
SuA---------- Summerton	Good	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
Tc: Toccoa----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Cartecay----------	Fair	Good	Good	Good	Good	Fair	Poor	Good	Good	Fair.
To---------- Toccoa	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
VaC---------- Vaucluse	Fair	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
VaD---------- Vaucluse	Poor	Fair	Fair	Fair	Fair	Very poor.	Very poor.	Fair	Fair	Very poor.
WaB---------- Wagram	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
We---------- Wehadkee	Very poor.	Poor	Poor	Fair	Fair	Good	Fair	Poor	Fair	Fair.
WkA, WkB---------- Wickham	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WkD---------- Wickham	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
WnB---------- Winnsboro	Fair	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
WnC---------- Winnsboro	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AeB---- Ailey	Severe: cutbanks cave.	Slight----	Slight----	Slight----	Slight----	Moderate: droughty.
AeC---- Ailey	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
ApB---- Alpin	Severe: cutbanks cave.	Slight----	Slight----	Slight----	Slight----	Severe: droughty, too sandy.
ApC, ApD---- Alpin	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty, too sandy.
AtA---- Altavista	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
BaB---- Blanton	Severe: cutbanks cave.	Slight----	Moderate: wetness.	Slight----	Slight----	Severe: droughty.
BaC---- Blanton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope, wetness.	Severe: slope.	Moderate: slope.	Severe: droughty.
Ca---- Cantey	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
CeB---- Cecil	Moderate: too clayey.	Slight----	Slight----	Moderate: slope.	Moderate: low strength.	Slight.
CeC---- Cecil	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.	Slight.
Ch---- Chewacla	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, wetness, flooding.	Severe: wetness.
Co---- Congaree	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.
Do---- Dorovan	Severe: excess humus, ponding.	Severe: flooding, ponding, low strength.	Severe: flooding, ponding.	Severe: flooding, ponding, low strength.	Severe: ponding, flooding.	Severe: ponding, flooding, excess humus.
DuB---- Durham	Slight----	Slight----	Slight----	Moderate: slope.	Slight----	Moderate: droughty.
DuC---- Durham	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
FaA---------- Faceville	Moderate: too clayey.	Slight---------	Slight---------	Slight---------	Moderate: low strength.	Slight.
FaB---------- Faceville	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
GeB---------- Georgeville	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Severe: low strength.	Slight.
GeC---------- Georgeville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
GoA---------- Goldsboro	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.	Slight.
Gr---------- Grady	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: low strength, wetness.	Severe: wetness.
GvB---------- Greenville	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Moderate: low strength.	Slight.
GvC---------- Greenville	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
HeB---------- Helena	Severe: wetness.	Severe: shrink-swell.	Severe: wetness, shrink-swell.	Severe: shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
HrB---------- Herndon	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Severe: low strength.	Slight.
HrC---------- Herndon	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
IeB---------- Iredell	Severe: wetness.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: wetness, shrink-swell.	Severe: low strength, shrink-swell.	Moderate: wetness.
Jo---------- Johnston	Severe: cutbanks cave, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: flooding, ponding.	Severe: ponding, flooding.	Severe: ponding, flooding.
LaB---------- Lakeland	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Moderate: droughty, too sandy.
LaC, LaD--------- Lakeland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, too sandy.
LuB---------- Lugoff	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: small stones.
LuC, LuD--------- Lugoff	Moderate: slope, too clayey.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MaB2---------- Madison	Moderate: too clayey.	Slight---------	Slight---------	Moderate: slope.	Severe: low strength.	Slight.
MaC2---------- Madison	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
MaE2, MaF2------- Madison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
NaC---------- Nason	Moderate: slope, too clayey.	Moderate: slope, shrink-swell.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
NaE---------- Nason	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, low strength.	Severe: slope.
NoA---------- Norfolk	Moderate: wetness.	Slight---------	Moderate: wetness.	Slight---------	Slight---------	Moderate: droughty.
NoB---------- Norfolk	Moderate: wetness.	Slight---------	Moderate: wetness.	Moderate: slope.	Slight---------	Moderate: droughty.
PaC2, PaD2------- Pacolet	Moderate: too clayey, slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: low strength.	Moderate: slope.
PaE2---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Pe, Pg---------- Pantego	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
PnA, PnB--------- Pelion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness.
PnC---------- Pelion	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.
PsA---------- Persanti	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: low strength.	Slight.
PxE---------- Poindexter	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Qz---------- Quartzipsamments	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: droughty.
Ra---------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
RoD---------- Rion	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, large stones, slope.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Map symbol and soil name	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
RoF---------- Rion	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
SuA---------- Summerton	Moderate: too clayey.	Slight---------	Slight---------	Slight---------	Severe: low strength.	Slight.
Tc: Toccoa----------	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Cartecay--------	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Moderate: wetness, flooding.
To---------- Toccoa	Moderate: wetness, flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
VaC, VaD--------- Vaucluse	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
WaB---------- Wagram	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty, too sandy.
We---------- Wehadkee	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness, flooding.
WkA---------- Wickham	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
WkB---------- Wickham	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
WkD---------- Wickham	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
WnB---------- Winnsboro	Slight---------	Severe: shrink-swell.	Severe: shrink-swell.	Moderate: slope.	Severe: low strength, shrink-swell.	Slight.
WnC---------- Winnsboro	Moderate: slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: slope.	Severe: shrink-swell.	Moderate: slope.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
AeB---- Ailey	Severe: percs slowly.	Severe: seepage.	Slight----	Severe: seepage.	Good.
AeC---- Ailey	Severe: percs slowly.	Severe: seepage, slope.	Moderate: slope.	Severe: seepage.	Fair: slope.
ApB---- Alpin	Slight----	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
ApC, ApD---- Alpin	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: too sandy, seepage.
AtA---- Altavista	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
BaB---- Blanton	Moderate: wetness.	Severe: seepage.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
BaC---- Blanton	Moderate: wetness, slope.	Severe: seepage, slope.	Severe: too sandy.	Severe: seepage.	Poor: too sandy.
Ca---- Cantey	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
CeB---- Cecil	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey, hard to pack.
CeC---- Cecil	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
Ch---- Chewacla	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: hard to pack, wetness.
Co---- Congaree	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: wetness.
Do---- Dorovan	Severe: flooding, ponding.	Severe: flooding, excess humus, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, ponding.	Poor: ponding, excess humus.
DuB---- Durham	Moderate: percs slowly.	Moderate: seepage.	Slight----	Slight----	Good.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
DuC---- Durham	Moderate: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
FaA---- Faceville	Slight----	Moderate: seepage.	Moderate: too clayey.	Slight----	Fair: too clayey.
FaB---- Faceville	Slight----	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey.
GeB---- Georgeville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey, hard to pack.
GeC---- Georgeville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
GoA---- Goldsboro	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: wetness.
Gr---- Grady	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
GvB---- Greenville	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey.
GvC---- Greenville	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
HeB---- Helena	Severe: wetness, percs slowly.	Severe: wetness.	Severe: depth to rock, wetness, too clayey.	Moderate: wetness, depth to rock.	Poor: too clayey, hard to pack.
HrB---- Herndon	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----	Fair: too clayey, hard to pack.
HrC---- Herndon	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, hard to pack, slope.
IeB---- Iredell	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness, too clayey.	Severe: wetness.	Poor: too clayey, hard to pack, wetness.
Jo---- Johnston	Severe: flooding, ponding, poor filter.	Severe: seepage, flooding, ponding.	Severe: flooding, seepage, ponding.	Severe: flooding, seepage, ponding.	Poor: seepage, ponding.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
LaB---------- Lakeland	Slight----------	Severe: seepage.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
LaC, LaD---------- Lakeland	Moderate: slope.	Severe: seepage, slope.	Severe: seepage, too sandy.	Severe: seepage.	Poor: seepage, too sandy.
LuB---------- Lugoff	Slight----------	Severe: seepage.	Severe: too clayey.	Severe: seepage.	Poor: too clayey.
LuC, LuD---------- Lugoff	Moderate: slope.	Severe: slope, seepage.	Severe: too clayey.	Severe: seepage.	Poor: too clayey.
MaB2---------- Madison	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: too clayey.	Slight----------	Poor: thin layer.
MaC2---------- Madison	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Poor: thin layer.
MaE2, MaF2--------- Madison	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope, thin layer.
NaC---------- Nason	Moderate: slope, depth to rock, percs slowly.	Severe: slope.	Severe: too clayey, depth to rock.	Moderate: slope, depth to rock.	Poor: too clayey, hard to pack.
NaE---------- Nason	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, too clayey.	Severe: slope.	Poor: slope, too clayey, hard to pack.
NoA, NoB---------- Norfolk	Moderate: wetness.	Moderate: seepage.	Severe: wetness.	Slight----------	Slight.
PaC2, PaD2--------- Pacolet	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
PaE2---------- Pacolet	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Pe, Pg---------- Pantego	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
PnA, PnB---------- Pelion	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.
PnC---------- Pelion	Severe: wetness, percs slowly.	Severe: slope, wetness.	Severe: wetness.	Severe: wetness.	Poor: wetness.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
PsA---------- Persanti	Severe: wetness, percs slowly.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Fair: too clayey, hard to pack, wetness.
PxE---------- Poindexter	Severe: slope.	Severe: seepage, slope.	Severe: depth to rock, seepage, slope.	Severe: seepage, slope.	Poor: slope.
Qz---------- Quartzipsamments	Severe: poor filter.	Severe: seepage.	Severe: seepage.	Severe: seepage.	Poor: seepage.
Ra---------- Rains	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, seepage.	Poor: wetness.
RoD---------- Rion	Moderate: percs slowly, slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Poor: thin layer.
RoF---------- Rion	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope, thin layer.
SuA---------- Summerton	Severe: percs slowly.	Slight----------	Moderate: too clayey.	Slight----------	Fair: too clayey, hard to pack.
Tc: Toccoa----------	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Good.
Cartecay----------	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Fair: wetness.
To---------- Toccoa	Severe: flooding, wetness.	Severe: seepage, flooding, wetness.	Severe: flooding, seepage, wetness.	Severe: flooding, seepage, wetness.	Good.
VaC, VaD---------- Vaucluse	Severe: percs slowly.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: too clayey, slope.
WaB---------- Wagram	Slight----------	Moderate: seepage.	Slight----------	Slight----------	Good.
We---------- Wehadkee	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
WkA---------- Wickham	Slight----------	Moderate: seepage.	Severe: seepage.	Slight----------	Fair: thin layer.

TABLE 11.--SANITARY FACILITIES--Continued

Map symbol and soil name	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
WkB---------- Wickham	Slight----------	Moderate: seepage, slope.	Severe: seepage.	Slight----------	Fair: thin layer.
WkD---------- Wickham	Moderate: slope.	Severe: slope.	Severe: seepage.	Moderate: slope.	Fair: slope, thin layer.
WnB---------- Winnsboro	Severe: percs slowly.	Moderate: depth to rock, slope.	Severe: depth to rock.	Moderate: depth to rock.	Poor: small stones.
WnC---------- Winnsboro	Severe: percs slowly.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Poor: small stones.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
AeB, AeC---------- Ailey	Good----------	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
ApB, ApC, ApD--------- Alpin	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
AtA---------- Altavista	Fair: wetness, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Good.
BaB, BaC---------- Blanton	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
Ca---------- Cantey	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
CeB, CeC---------- Cecil	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Ch---------- Chewacla	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Co---------- Congaree	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Do---------- Dorovan	Poor: wetness.	Probable----------	Improbable: too sandy.	Poor: excess humus, wetness.
DuB---------- Durham	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
DuC---------- Durham	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
FaA, FaB---------- Faceville	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
GeB, GeC---------- Georgeville	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
GoA---------- Goldsboro	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
Gr---------- Grady	Poor: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, wetness.
GvB, GvC---------- Greenville	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
HeB---------- Helena	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
HrB, HrC---------- Herndon	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
IeB---------- Iredell	Poor: low strength, shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Jo---------- Johnston	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
LaB, LaC, LaD--------- Lakeland	Good----------	Probable----------	Improbable: too sandy.	Poor: too sandy.
LuB, LuC, LuD--------- Lugoff	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
MaB2, MaC2---------- Madison	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
MaE2---------- Madison	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
MaF2---------- Madison	Poor: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
NaC---------- Nason	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, area reclaim.
NaE---------- Nason	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope, area reclaim.
NoA, NoB---------- Norfolk	Good----------	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
PaC2, PaD2---------- Pacolet	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
PaE2---------- Pacolet	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer, slope.
Pe, Pg---------- Pantego	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
PnA, PnB---------- Pelion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer.
PnC---------- Pelion	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, thin layer, slope.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Map symbol and soil name	Roadfill	Sand	Gravel	Topsoil
PsA---- Persanti	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
PxE---- Poindexter	Fair: area reclaim, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Qz---- Quartzipsamments	Good----	Probable----	Improbable: too sandy.	Fair: too sandy.
Ra---- Rains	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
RoD---- Rion	Good----	Probable----	Probable----	Poor: small stones, area reclaim.
RoF---- Rion	Poor: slope.	Probable----	Probable----	Poor: small stones, area reclaim, slope.
SuA---- Summerton	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Tc: Toccoa----	Good----	Improbable: excess fines.	Improbable: excess fines.	Good.
Cartecay----	Fair: wetness.	Probable----	Improbable: too sandy.	Fair: wetness.
To---- Toccoa	Good----	Improbable: excess fines.	Improbable: excess fines.	Good.
VaC, VaD---- Vaucluse	Good----	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, too sandy, small stones.
WaB---- Wagram	Good----	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
We---- Wehadkee	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
WkA, WkB---- Wickham	Fair: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Good.
WkD---- Wickham	Fair: thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
WnB, WnC---- Winnsboro	Fair: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." The information in this table indicates the dominant soil condition; it does not eliminate the need for onsite investigation]

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
AeB---------- Ailey	Moderate: seepage, slope.	Slight--------	Deep to water	Droughty, percs slowly, slope.	Too sandy, percs slowly.	Droughty, rooting depth.
AeC---------- Ailey	Severe: slope.	Slight--------	Deep to water	Droughty, percs slowly, slope.	Slope, too sandy, percs slowly.	Slope, droughty, rooting depth.
ApB---------- Alpin	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Too sandy, soil blowing.	Droughty.
ApC, ApD--------- Alpin	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
AtA---------- Altavista	Moderate: seepage.	Moderate: wetness.	Favorable------	Wetness--------	Wetness--------	Favorable.
BaB---------- Blanton	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
BaC---------- Blanton	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
Ca---------- Cantey	Slight---------	Severe: hard to pack, wetness.	Percs slowly---	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
CeB---------- Cecil	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slope----------	Favorable------	Favorable.
CeC---------- Cecil	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slope----------	Slope----------	Slope.
Ch---------- Chewacla	Moderate: seepage.	Severe: piping, hard to pack, wetness.	Flooding-------	Wetness, flooding.	Wetness--------	Wetness.
Co---------- Congaree	Moderate: seepage.	Severe: piping.	Flooding-------	Wetness--------	Erodes easily, wetness.	Erodes easily.
Do---------- Dorovan	Moderate: seepage.	Severe: excess humus, ponding.	Ponding, flooding, subsides.	Ponding, flooding.	Ponding--------	Wetness.
DuB---------- Durham	Slight---------	Slight--------	Deep to water	Droughty, fast intake.	Favorable------	Droughty.
DuC---------- Durham	Slight---------	Slight--------	Deep to water	Droughty, fast intake.	Slope----------	Slope, droughty.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
FaA---------- Faceville	Moderate: seepage.	Slight--------	Deep to water	Fast intake----	Favorable------	Favorable.
FaB---------- Faceville	Moderate: seepage.	Slight--------	Deep to water	Fast intake, slope.	Favorable------	Favorable.
GeB---------- Georgeville	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slope----------	Favorable------	Favorable.
GeC---------- Georgeville	Moderate: seepage.	Severe: hard to pack.	Deep to water	Slope----------	Slope----------	Slope.
GoA---------- Goldsboro	Moderate: seepage.	Moderate: piping, wetness.	Favorable------	Wetness, fast intake.	Wetness--------	Favorable.
Gr---------- Grady	Slight---------	Severe: wetness.	Percs slowly---	Wetness, percs slowly.	Wetness, percs slowly.	Wetness, percs slowly.
GvB---------- Greenville	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope----------	Favorable------	Favorable.
GvC---------- Greenville	Severe: slope.	Moderate: piping.	Deep to water	Slope----------	Slope----------	Slope.
HeB---------- Helena	Moderate: depth to rock, slope.	Severe: hard to pack.	Percs slowly, slope.	Wetness, percs slowly.	Wetness, percs slowly.	Percs slowly.
HrB---------- Herndon	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope, erodes easily.	Erodes easily	Erodes easily.
HrC---------- Herndon	Severe: slope.	Severe: hard to pack	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
IeB---------- Iredell	Moderate: slope.	Severe: hard to pack	Percs slowly, slope.	Wetness, percs slowly.	Wetness--------	Wetness, percs slowly.
Jo---------- Johnston	Severe: seepage.	Severe: seepage, piping, ponding.	Ponding, flooding, cutbanks cave.	Ponding, flooding.	Ponding--------	Wetness.
LaB---------- Lakeland	Severe: seepage.	Severe: seepage.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
LaC, LaD--------- Lakeland	Severe: seepage, slope.	Severe: seepage.	Deep to water	Droughty, fast intake, soil blowing.	Slope, too sandy, soil blowing.	Slope, droughty.
LuB---------- Lugoff	Moderate: slope, seepage.	Slight--------	Deep to water	Slope, fast intake, droughty.	Droughty-------	Favorable.
LuC, LuD--------- Lugoff	Severe: slope.	Slight--------	Deep to water	Slope, fast intake, droughty.	Slope, droughty.	Slope.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
MaB2---------- Madison	Moderate: seepage, slope.	Severe: hard to pack.	Deep to water	Slope----------	Favorable------	Favorable.
MaC2, MaE2, MaF2---------- Madison	Severe: slope.	Severe: hard to pack.	Deep to water	Slope----------	Slope----------	Slope.
NaC, NaE--------- Nason	Severe: slope.	Severe: hard to pack.	Deep to water	Erodes easily, slope.	Slope, erodes easily.	Slope, erodes easily.
NoA---------- Norfolk	Moderate: seepage.	Moderate: piping.	Deep to water	Fast intake----	Favorable------	Favorable.
NoB---------- Norfolk	Moderate: seepage, slope.	Moderate: piping.	Deep to water	Slope----------	Favorable------	Favorable.
PaC2, PaD2, PaE2---------- Pacolet	Severe: slope.	Severe: hard to pack.	Deep to water	Slope----------	Slope----------	Slope.
Pe, Pg---------- Pantego	Moderate: seepage.	Severe: wetness.	Favorable------	Wetness--------	Wetness--------	Wetness.
PnA---------- Pelion	Moderate: seepage.	Severe: seepage, piping.	Percs slowly---	Wetness, droughty, fast intake.	Wetness, soil blowing.	Wetness, droughty.
PnB---------- Pelion	Moderate: seepage.	Severe: seepage, piping.	Percs slowly, slope.	Wetness, droughty, fast intake.	Wetness, soil blowing.	Wetness, droughty.
PnC---------- Pelion	Moderate: seepage.	Severe: seepage, piping.	Percs slowly, slope.	Wetness, droughty, fast intake.	Slope, wetness, soil blowing.	Wetness, slope, droughty.
PsA---------- Persanti	Slight---------	Severe: hard to pack.	Percs slowly---	Wetness, percs slowly.	Wetness, soil blowing, percs slowly.	Percs slowly.
PxE---------- Poindexter	Severe: seepage, slope.	Severe: piping.	Deep to water	Slope, erodes easily.	Slope, erodes easily.	Slope, erodes easily.
Qz---------- Quartzipsamments	Severe: seepage.	Severe: seepage, piping.	Deep to water	Droughty, fast intake, soil blowing.	Too sandy, soil blowing.	Droughty.
Ra---------- Rains	Moderate: seepage.	Severe: piping, wetness.	Favorable------	Wetness--------	Wetness, soil blowing.	Wetness.
RoD, RoF--------- Rion	Severe: seepage, slope.	Moderate: thin layer, seepage.	Deep to water	Droughty, slope.	Slope----------	Slope, droughty.
SuA---------- Summerton	Severe: slope.	Severe: hard to pack.	Deep to water	Soil blowing---	Soil blowing---	Favorable.

TABLE 13.--WATER MANAGEMENT--Continued

Map symbol and soil name	Limitations for--		Features affecting--			
	Pond reservoir areas	Embankments, dikes, and levees	Drainage	Irrigation	Terraces and diversions	Grassed waterways
Tc:						
Toccoa	Severe: seepage.	Severe: piping.	Flooding	Flooding	Favorable	Favorable.
Cartecay	Severe: seepage.	Severe: piping, wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
To---------- Toccoa	Severe: seepage.	Severe: piping.	Flooding	Flooding	Favorable	Favorable.
VaC, VaD---------- Vaucluse	Severe: seepage, slope.	Severe: piping.	Deep to water	Droughty, fast intake, percs slowly.	Slope, soil blowing.	Slope, droughty, rooting depth.
WaB---------- Wagram	Moderate: seepage.	Slight	Deep to water	Droughty, fast intake, slope.	Favorable	Droughty.
We---------- Wehadkee	Moderate: seepage.	Severe: wetness.	Flooding	Wetness, flooding.	Wetness	Wetness.
WkA---------- Wickham	Moderate: seepage.	Moderate: thin layer.	Deep to water	Favorable	Favorable	Favorable.
WkB---------- Wickham	Moderate: seepage.	Moderate: thin layer.	Deep to water	Slope	Favorable	Favorable.
WkD---------- Wickham	Moderate: seepage.	Moderate: thin layer.	Deep to water	Slope	Slope	Slope.
WnB---------- Winnsboro	Moderate: depth to rock, slope.	Severe: piping.	Deep to water	Percs slowly, slope.	Favorable	Percs slowly.
WnC---------- Winnsboro	Severe: slope.	Severe: piping.	Deep to water	Percs slowly, slope.	Slope	Slope, percs slowly.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated. Some soils may have Unified classifications and USDA textures in addition to those shown. In general, the dominant classifications and textures are shown]

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AeB, AeC--------- Ailey	0-30	Sand, loamy sand.	SP-SM	A-2, A-3	0	85-100	75-95	50-75	5-12	---	NP
	30-38	Sandy loam, sandy clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	90-100	75-100	60-90	30-40	20-40	3-16
	38-72	Sandy loam, sandy clay loam, clay loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	90-100	75-100	55-90	20-40	20-40	3-15
ApB, ApC, ApD---- Alpin	0-5	Sand----------	SP-SM, SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	5-53	Fine sand, sand	SP-SM	A-3, A-2-4	0	95-100	90-100	60-100	5-20	---	NP
	53-85	Fine sand, sand	SP-SM, SM	A-2-4	0	95-100	90-100	60-100	11-20	---	NP
AtA--------- Altavista	0-6	Loam----------	ML, CL-ML, SM, SM-SC	A-4	0	95-100	90-100	65-99	35-60	<23	NP-7
	6-46	Clay loam, sandy clay loam, loam.	CL, CL-ML, SC, SM-SC	A-4, A-6, A-7	0	95-100	95-100	60-99	45-75	20-45	5-28
	46-60	Variable---------	---	---	---	---	---	---	---	---	---
BaB, BaC--------- Blanton	0-62	Sand----------	SP-SM	A-3, A-2-4	0	100	90-100	65-100	5-12	---	NP
	62-67	Sandy loam, loamy sand, loamy coarse sand.	SM	A-2-4	0	100	95-100	65-96	13-30	<25	NP-3
	67-80	Sandy clay loam, sandy loam, fine sandy loam.	SC, SM-SC, SM	A-4, A-2-4, A-2-6, A-6	0	100	95-100	69-96	25-50	<45	3-22
Ca--------- Cantey	0-3	Loam----------	ML	A-4, A-6, A-7	0	98-100	98-100	78-98	50-80	<49	NP-20
	3-60	Clay, sandy clay, silty clay.	CL, ML, MH, CH	A-6, A-7	0	98-100	98-100	75-100	55-95	28-66	12-32
CeB, CeC--------- Cecil	0-11	Sandy loam-------	SM, SM-SC	A-2, A-4	0	84-100	80-100	67-90	26-42	<30	NP-6
	11-26	Sandy clay loam, clay loam.	SM, SC, ML, CL	A-4, A-6	0	74-100	72-100	68-95	38-81	21-35	3-15
	26-65	Clay----------	MH, ML	A-7, A-5	0	97-100	92-100	72-99	55-95	41-80	9-37
Ch--------- Chewacla	0-8	Loam----------	ML, CL, CL-ML	A-4, A-6, A-7	0	98-100	95-100	70-100	55-90	25-49	4-20
	8-54	Sandy clay loam, loam, sandy loam.	SM, SM-SC, ML	A-4, A-7-6	0	96-100	95-100	60-96	36-70	20-45	NP-15
	54-70	Variable---------	---	---	---	---	---	---	---	---	---
Co--------- Congaree	0-10	Loam----------	CL-ML, ML, CL	A-4	0	95-100	95-100	70-100	51-90	20-35	3-10
	10-37	Silty clay loam, fine sandy loam, loam.	SC, ML, CL, SM	A-4, A-6, A-7	0	95-100	95-100	70-100	40-90	25-50	3-22
	37-70	Variable---------	---	---	---	---	---	---	---	---	---

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Do	0-66	Muck	PT	---	0	---	---	---	---	---	---
Dorovan	66-80	Sand, loamy sand, loam.	SP-SM, SM-SC, SM	A-1, A-3, A-4, A-2-4	0	100	100	5-70	5-49	<20	NP-7
DuB, DuC	0-7	Loamy sand	SM	A-2	0-3	95-100	90-100	50-85	13-30	<16	NP-3
Durham	7-36	Sandy clay loam, clay loam.	SC, CL	A-2, A-6, A-7	0-3	95-100	90-100	65-90	30-55	20-47	10-25
	36-55	Clay loam, sandy clay, sandy clay loam.	SC, CL	A-6, A-7	0-3	95-100	90-100	70-95	36-70	30-49	13-28
	55-65	Sandy clay loam, sandy loam.	SM, SC, SM-SC	A-2, A-4	0-3	95-100	90-100	50-85	18-49	<20	NP-10
FaA, FaB	0-7	Loamy sand	SM	A-2	0	90-100	85-100	72-97	13-25	---	NP
Faceville	7-65	Sandy clay, clay, clay loam.	CL, SC, CH	A-6, A-7	0	98-100	95-100	75-99	45-72	25-52	11-25
GeB, GeC	0-5	Loam	ML	A-4	0-2	90-100	84-100	65-100	51-98	<40	NP-10
Georgeville	5-58	Clay, silty clay, silty clay loam.	MH, ML	A-7	0-1	95-100	95-100	90-100	75-98	41-79	15-40
	58-70	Silty clay loam, loam, silt loam.	ML, CL, CL-ML	A-4, A-6	0-5	90-100	90-100	65-100	51-95	<30	NP-12
GoA	0-12	Loamy sand	SM	A-2	0	95-100	95-100	50-95	13-30	<20	NP
Goldsboro	12-65	Sandy clay loam, sandy loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	95-100	60-100	25-55	16-37	4-18
Gr	0-3	Loam	ML, CL-ML, CL	A-4, A-6	0	100	99-100	85-100	50-75	<30	NP-15
Grady	3-10	Clay loam, sandy clay loam, loam.	CL	A-6	0	100	100	90-100	51-80	25-40	11-20
	10-60	Clay, sandy clay	CL, ML, CH	A-6, A-7	0	100	100	90-100	55-90	36-51	12-25
GvB, GvC	0-5	Sandy loam	SM, SC, SM-SC, CL-ML	A-2, A-4	0	95-100	90-100	65-85	30-55	<25	NP-10
Greenville	5-65	Sandy clay loam, sandy clay, clay, clay loam.	CL, SC, ML	A-6, A-7, A-4	0	98-100	95-100	80-95	40-80	28-50	7-25
HeB	0-7	Sandy loam	SM, SM-SC, SC	A-2, A-4	0-5	95-100	90-100	51-90	26-46	<30	NP-9
Helena	7-13	Sandy clay loam, clay loam, sandy loam.	CL, SC	A-6, A-7	0-5	95-100	95-100	70-90	49-70	30-49	15-26
	13-46	Clay loam, sandy clay, clay.	CH	A-7	0-5	95-100	95-100	73-97	56-86	50-85	24-50
	46-65	Variable	---	---	---	---	---	---	---	---	---
HrB, HrC	0-6	Loam	ML, CL, CL-ML	A-4, A-6	0-2	90-100	90-100	80-98	60-90	<36	NP-12
Herndon	6-46	Silty clay loam, silty clay, clay.	MH, ML	A-7	0-1	98-100	90-100	80-99	70-98	41-70	13-30
	46-60	Silt loam, loam, fine sandy loam.	MH, ML	A-7, A-5	0-2	90-100	85-100	80-99	51-95	41-70	9-36

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
IeB---------- Iredell	0-6	Loam----------	ML, CL-ML, CL	A-4, A-6	0-1	99-100	95-100	80-95	51-70	25-38	5-12
	6-25	Clay----------	CH	A-7	0	99-100	60-100	60-100	55-95	54-115	29-85
	25-29	Loam, sandy clay loam, clay loam.	CL, CH, SC	A-7	0-1	98-100	85-100	70-95	40-75	41-60	20-39
	29-60	Variable---------	---	---	---	---	---	---	---	---	---
Jo---------- Johnston	0-30	Loam----------	ML, SM	A-2, A-4	0	100	100	60-100	18-65	<35	NP-10
	30-66	Stratified loamy sand to sand.	SM, SP-SM	A-2, A-3	0	100	100	50-100	5-30	---	NP
LaB, LaC, LaD---- Lakeland	0-44	Sand----------	SP-SM	A-3, A-2-4	0	90-100	90-100	60-100	5-12	---	NP
	44-84	Sand, fine sand	SP, SP-SM	A-3, A-2-4	0	90-100	90-100	50-100	1-12	---	NP
LuB, LuC, LuD---- Lugoff	0-14	Gravelly loamy sand.	GM, GP-GM	A-1, A-2, A-3	0-5	35-75	32-70	18-52	5-21	<25	NP-4
	14-34	Gravelly clay----	GM-GC, GC, CL	A-2, A-4, A-6, A-7	0-5	50-75	46-70	40-70	34-66	25-48	6-20
	34-65	Clay----------	CL, CL-ML	A-4, A-6, A-7	0-2	75-98	70-97	65-95	52-90	25-48	6-20
MaB2, MaC2, MaE, MaF2---------- Madison	0-3	Sandy clay loam	CL	A-4, A-6	0-3	90-100	85-100	70-95	50-80	20-40	7-20
	3-27	Clay, clay loam, sandy clay.	MH, ML	A-7	0-3	90-100	85-100	75-97	57-85	43-70	12-30
	27-34	Loam, sandy clay loam, clay loam.	CL	A-4, A-6	0-3	90-100	85-100	70-95	50-80	20-40	7-20
	34-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
NaC, NaE--------- Nason	0-10	Loam----------	ML, CL-ML, SM	A-4	0-5	80-100	75-100	55-95	35-85	<38	NP-10
	10-31	Silty clay loam, silty clay, clay.	CL, CH	A-7	0-5	80-100	75-100	70-95	65-90	40-60	15-30
	31-60	Weathered bedrock	---	---	---	---	---	---	---	---	---
NoA, NoB--------- Norfolk	0-14	Loamy sand-------	SM	A-2, A-4	0	95-100	92-100	50-95	13-36	<20	NP
	14-60	Sandy loam, sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	95-100	91-100	70-96	30-63	20-38	4-15
	60-70	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7-6	0	100	98-100	65-98	36-72	20-52	4-23
PaC2, PaD2, PaE2- Pacolet	0-3	Sandy clay loam	SM-SC, SC	A-4, A-6	0-1	95-100	90-100	65-85	36-50	20-40	4-17
	3-25	Sandy clay, clay loam, clay.	ML, MH, CL	A-6, A-7	0-1	80-100	80-100	60-95	51-75	38-65	11-30
	25-40	Clay loam, sandy clay loam, sandy loam.	CL, CL-ML, SM-SC, SC	A-2, A-4, A-6	0-2	80-100	70-100	60-80	30-60	20-35	5-15
	40-65	Sandy loam, fine sandy loam, loam.	SM, SM-SC	A-4, A-2-4	0-2	80-100	70-100	60-80	30-50	<28	NP-6
Pe---------- Pantego	0-14	Loam----------	SM, SM-SC, CL, ML	A-2, A-4	0	100	95-100	60-95	25-75	<35	NP-10
	14-62	Sandy clay loam, sandy loam, clay loam.	SC, CL, SM-SC, CL-ML	A-4, A-6, A-2	0	100	95-100	80-100	30-80	20-40	4-16

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Pg Pantego	0-19	Loam	SM, SM-SC, CL, ML	A-2, A-4	0	100	95-100	60-95	25-75	<35	NP-10
	19-62	Sandy clay loam, sandy loam, clay loam.	SC, CL, SM-SC, CL-ML	A-4, A-6, A-2	0	100	95-100	80-100	30-80	20-40	4-16
PnA, PnB, PnC Pelion	0-14	Loamy sand	SM, SP-SM	A-2, A-3	0	98-100	95-100	60-85	8-30	---	NP
	14-20	Sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	95-100	92-100	50-90	25-55	20-40	5-18
	20-37	Sandy clay loam, sandy clay, clay.	SM-SC, SC, CL-ML, CL	A-2, A-4, A-6	0	98-100	92-100	50-90	25-60	20-40	5-20
	37-70	Sandy clay loam, sandy loam.	SM, SC, SM-SC	A-2, A-4, A-6	0	98-100	92-100	50-90	18-50	<40	NP-18
PsA Persanti	0-6	Sandy loam	SM, SM-SC, ML, CL-ML	A-2, A-4	0	100	98-100	75-98	30-60	<30	NP-6
	6-65	Clay, clay loam, silty clay loam.	CL, ML, CH, MH	A-4, A-6, A-7	0	100	98-100	90-100	60-90	30-55	8-25
PxE Poindexter	0-4	Silt loam	ML, CL-ML	A-4	0	90-100	85-100	85-100	55-90	<25	NP-7
	4-10	Clay loam, sandy clay loam, loam.	SC, CL	A-6	0	90-100	85-100	80-100	35-85	30-40	11-20
	10-25	Silty clay loam, loam, sandy loam.	SM, ML, CL-ML, SM-SC	A-2, A-4	0	90-100	85-100	55-95	30-70	<20	NP-5
	25-40	Weathered bedrock	---	---	---	---	---	---	---	---	---
Qz Quartzipsamments	0-60		SP, SP-SM, SM	A-2-4, A-3, A-1-B	0	75-100	70-100	30-100	1-25	---	NP
Ra Rains	0-14	Sandy loam	SM, ML	A-2, A-4	0	100	95-100	50-85	25-56	<35	NP-10
	14-44	Sandy clay loam, clay loam.	SC, SM-SC, CL, CL-ML	A-2, A-4, A-6	0	100	95-100	55-98	30-70	18-40	4-20
	44-68	Sandy clay loam, clay loam, sandy clay.	SC, SM-SC, CL, CL-ML	A-4, A-6, A-7	0	100	98-100	60-98	36-72	18-45	4-28
RoD, RoF Rion	0-7	Gravelly sandy loam.	SM, SP-SM	A-2, A-1-B	2-10	70-90	60-75	40-60	10-35	<30	NP-7
	7-26	Gravelly sandy loam, gravelly sandy clay loam, gravelly clay loam.	SM-SC, SC	A-2, A-4, A-1-B, A-6	2-10	70-90	60-75	40-60	20-45	20-35	5-15
	26-60	Gravelly sandy loam, gravelly sandy clay loam, gravelly loamy sand.	SM, SC, SP-SM, SP-SC	A-2, A-4, A-1-B, A-6	2-10	70-90	55-75	40-60	10-45	<30	NP-12
SuA Summerton	0-10	Sandy loam	SM, ML	A-2, A-4	0	100	95-100	75-95	30-60	<35	NP-7
	10-75	Sandy clay, clay loam, clay.	CL, ML, CH, MH	A-6, A-7	0	100	98-100	90-100	55-80	35-71	11-35

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Map symbol and soil name	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Tc:											
Toccoa	0-9	Sandy loam	SM	A-2, A-4	0	95-100	95-100	85-100	25-50	<30	NP-4
	9-60	Sandy loam, loam	SM, ML	A-2, A-4	0	95-100	90-100	60-100	30-55	<30	NP-4
Cartecay	0-9	Silt loam	ML, CL, CL-ML	A-4, A-6	0	98-100	95-100	90-100	51-95	<40	NP-15
	9-53	Sandy loam, fine sandy loam, loam.	SM, SC, SM-SC	A-2, A-4	0	90-100	75-100	60-85	25-50	<30	NP-10
	53-60	Loamy sand, sand, sandy loam.	SM, SP-SM	A-2, A-1	0	80-100	35-95	25-80	5-35	---	NP
To	0-9	Sandy loam	SM	A-2, A-4	0	95-100	95-100	85-100	23-50	<30	NP-4
Toccoa	9-60	Sandy loam, loam	SM, ML	A-2, A-4	0	95-100	90-100	60-100	30-59	<30	NP-4
VaC, VaD	0-5	Loamy sand	SM, SP-SM	A-2, A-3	0-5	90-100	90-100	51-75	8-30	---	NP
Vaucluse	5-15	Sandy clay loam, sandy loam.	SC, SM-SC	A-2, A-4, A-6	0-5	90-100	90-100	51-75	25-50	20-40	5-18
	15-54	Sandy clay loam, sandy loam, sandy clay.	SC, SM-SC, SM	A-2, A-4, A-6	0-5	95-100	92-100	51-80	20-50	<40	NP-20
	54-65	Sandy loam, sandy clay loam, loamy sand.	SM, SC, SM-SC	A-2, A-4, A-6	0-2	95-100	95-100	51-90	15-50	<30	NP-12
WaB	0-31	Sand	SP-SM, SM	A-1, A-2, A-3	0	95-100	90-100	45-80	5-15	---	NP
Wagram	31-70	Sandy clay loam, sandy loam.	SC	A-2, A-4, A-6, A-7	0	100	98-100	60-95	28-49	21-41	8-25
We	0-9	Silt loam	CL, MH, ML	A-6, A-7	0	100	98-100	85-100	51-98	30-58	10-24
Wehadkee	9-46	Loam, sandy clay loam, clay loam.	ML, CL, CL-ML	A-6, A-7, A-4	0	100	99-100	85-100	51-90	25-50	7-25
	46-70	Variable	---	---	---	---	---	---	---	---	---
WkA, WkB, WkD	0-14	Fine sandy loam	SM, SM-SC, ML, CL-ML	A-4	0	95-100	90-100	70-100	45-80	<25	NP-7
Wickham	14-60	Sandy clay loam, clay loam, loam.	CL-ML, CL, SC, SM-SC	A-2, A-4, A-6, A-7-6	0	95-100	90-100	75-100	30-70	20-41	5-17
WnB, WnC	0-9	Loam	ML, CL-ML, CL	A-4, A-6	0-1	95-100	90-100	75-95	51-80	20-40	3-20
Winnsboro	9-27	Clay, clay loam	CH	A-7	0-5	90-100	85-100	75-95	65-95	51-92	25-55
	27-46	Loam, sandy clay loam, sandy loam.	ML, SM	A-2, A-4, A-6, A-7	0-5	90-100	45-100	30-95	22-75	25-48	3-15
	46-60	Weathered bedrock	---	---	---	---	---	---	---	---	---

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
AeB, AeC--------- Ailey	0-30 30-38 38-72	3-8 15-35 18-32	1.40-1.55 1.55-1.70 1.70-1.80	6.0-20 0.6-2.0 0.06-0.2	0.03-0.05 0.09-0.12 0.06-0.10	4.5-6.5 4.5-5.5 4.5-5.5	Low---------- Low---------- Low----------	0.10 0.24 0.17	4	2	<1
ApB, ApC, ApD---- Alpin	0-5 5-53 53-85	1-10 1-7 5-8	1.35-1.55 1.40-1.55 1.45-1.65	2.0-6.0 6.0-20 2.0-6.0	0.05-0.10 0.03-0.09 0.06-0.09	4.5-6.5 4.5-6.5 4.5-6.5	Low---------- Low---------- Low----------	0.10 0.10 0.10	5	2	0-2
AtA-------------- Altavista	0-6 6-46 46-60	10-24 18-35 ---	1.30-1.50 1.30-1.50 ---	2.0-6.0 0.6-2.0 ---	0.12-0.20 0.12-0.20 ---	4.5-6.0 4.5-6.0 ---	Low---------- Low---------- ----------	0.24 0.24 ----	5	---	.5-3
BaB, BaC--------- Blanton	0-62 62-67 67-80	1-7 10-18 12-30	1.30-1.60 1.53-1.65 1.60-1.70	6.0-20 2.0-6.0 0.6-2.0	0.03-0.07 0.10-0.15 0.10-0.15	4.5-6.0 4.5-5.5 4.5-5.5	Low---------- Low---------- Low----------	0.10 0.15 0.20	5	2	.5-1
Ca--------------- Cantey	0-3 3-60	10-20 35-60	1.20-1.50 1.30-1.50	0.6-2.0 0.06-0.2	0.14-0.18 0.11-0.16	3.6-6.5 3.6-5.5	Low---------- Moderate-----	0.28 0.24	5	5	1-5
CeB, CeC--------- Cecil	0-11 11-26 26-65	5-20 20-35 40-60	1.00-1.50 1.30-1.50 1.30-1.50	2.0-6.0 0.6-2.0 0.6-2.0	0.12-0.14 0.13-0.15 0.13-0.15	4.5-5.5 4.5-5.5 4.5-5.5	Low---------- Low---------- Low----------	0.28 0.28 0.28	4	---	.5-2
Ch--------------- Chewacla	0-8 8-54 54-70	10-27 18-35 ---	1.30-1.60 1.30-1.60 ---	0.6-2.0 0.6-2.0 ---	0.15-0.24 0.12-0.20 ---	4.5-6.5 4.5-6.5 ---	Low---------- Low---------- ----------	0.28 0.28 ----	5	---	1-4
Co--------------- Congaree	0-10 10-37 37-70	10-25 18-35 ---	1.20-1.40 1.20-1.50 ---	0.6-2.0 0.6-2.0 ---	0.12-0.20 0.12-0.20 ---	4.5-7.3 4.5-7.3 ---	Low---------- Low---------- ----------	0.37 0.37 ----	5	6	<4
Do--------------- Dorovan	0-66 66-80	--- 5-20	0.25-0.40 1.40-1.65	0.6-2.0 6.0-20	0.25-0.50 0.05-0.08	3.6-4.4 4.5-5.5	---------- Low----------	---- ----	---	---	---
DuB, DuC--------- Durham	0-7 7-36 36-55 55-65	2-10 18-35 25-45 8-30	1.40-1.70 1.30-1.60 1.20-1.50 1.30-1.50	2.0-6.0 0.6-2.0 0.2-0.6 0.6-2.0	0.06-0.10 0.12-0.16 0.14-0.18 0.08-0.14	4.5-6.0 4.5-5.5 4.5-5.5 4.5-5.5	Low---------- Low---------- Low---------- Low----------	0.17 0.20 0.20 0.20	5	---	.5-2
FaA, FaB--------- Faceville	0-7 7-65	2-10 35-55	--- ---	6.0-20 0.6-2.0	0.06-0.09 0.12-0.18	4.5-5.5 4.5-5.5	Low---------- Low----------	0.17 0.37	5	---	.5-1
GeB, GeC--------- Georgeville	0-5 5-58 58-70	5-27 35-60 15-40	1.20-1.40 1.20-1.40 1.20-1.40	0.6-2.0 0.6-2.0 0.6-2.0	0.15-0.20 0.13-0.18 0.05-0.10	4.5-6.0 4.5-5.5 4.5-5.5	Low---------- Low---------- Low----------	0.43 0.28 0.32	4	5	.5-2
GoA-------------- Goldsboro	0-12 12-65	2-8 18-30	1.55-1.75 1.30-1.50	6.0-20 0.6-2.0	0.06-0.11 0.11-0.15	4.5-5.5 4.5-5.5	Low---------- Low----------	0.17 0.24	5	---	.5-2
Gr--------------- Grady	0-3 3-10 10-60	20-30 20-35 45-65	1.20-1.45 1.40-1.55 1.50-1.60	0.6-2.0 0.2-0.6 0.06-0.2	0.10-0.18 0.10-0.15 0.12-0.16	3.6-5.5 3.6-5.5 3.6-5.5	Low---------- Low---------- Moderate-----	0.24 0.10 0.10	5	---	---
GvB, GvC--------- Greenville	0-5 5-65	5-20 35-55	1.30-1.65 1.35-1.55	0.6-6.0 0.6-2.0	0.07-0.14 0.14-0.18	4.5-6.0 4.5-6.0	Low---------- Low----------	0.24 0.17	5	---	.5-1

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
HeB----------	0-7	5-20	1.58-1.62	2.0-6.0	0.10-0.12	4.5-6.0	Low----------	0.15	3	---	.5-2
Helena	7-13	20-35	1.46-1.56	0.2-0.6	0.13-0.15	4.5-5.5	Moderate-----	0.28			
	13-46	35-60	1.44-1.55	0.06-0.2	0.13-0.15	4.5-5.5	High---------	0.28			
	46-65	---	---	---	---	---	----------	----			
HrB, HrC---------	0-6	5-27	1.20-1.40	0.6-2.0	0.14-0.20	3.6-6.5	Low----------	0.43	5	5	.5-1
Herndon	6-46	35-60	1.30-1.60	0.6-2.0	0.13-0.18	3.6-5.5	Low----------	0.28			
	46-60	10-30	1.20-1.40	0.6-2.0	0.05-0.08	3.6-5.5	Low----------	0.32			
IeB----------	0-6	15-35	1.20-1.40	0.6-2.0	0.14-0.17	5.1-7.3	Low----------	0.32	3	6	.5-2
Iredell	6-25	40-60	1.20-1.50	0.06-0.2	0.16-0.22	6.1-7.3	Very high----	0.20			
	25-29	15-35	1.30-1.60	0.06-0.2	0.14-0.18	6.1-7.8	High---------	0.28			
	29-60	---	---	---	---	---	----------	----			
Jo----------	0-30	5-18	1.30-1.55	2.0-6.0	0.10-0.20	4.5-5.5	Low----------	0.20	5	---	3-8
Johnston	30-66	2-12	1.55-1.65	6.0-20	0.02-0.07	4.5-5.5	Low----------	0.17			
LaB, LaC, LaD----	0-44	2-8	1.35-1.65	6.0-20	0.05-0.09	4.5-6.0	Low----------	0.10	5	2	<1
Lakeland	44-84	1-6	1.50-1.60	6.0-20	0.02-0.08	4.5-6.0	Low----------	0.10			
LuB, LuC, LuD----	0-14	2-10	1.40-1.70	6.0-20	0.03-0.08	5.1-6.5	Low----------	0.10	5	---	.5-2
Lugoff	14-34	35-65	1.30-1.55	0.6-2.0	0.10-0.16	4.5-6.0	Low----------	0.20			
	34-65	35-65	1.20-1.50	0.6-2.0	0.14-0.18	4.5-6.0	Low----------	0.24			
MaB2, MaC2, MaE2, MaF2----------	0-3	25-35	1.30-1.40	0.6-2.0	0.12-0.16	4.5-6.0	Low----------	0.28	4	---	.5-2
Madison	3-27	30-50	1.20-1.40	0.6-2.0	0.13-0.18	4.5-5.5	Low----------	0.32			
	27-34	25-35	1.30-1.40	0.6-2.0	0.12-0.16	4.5-5.5	Low----------	0.28			
	34-60	---	---	---	---	---	----------	----			
NaC, NaE---------	0-10	10-25	1.25-1.55	0.6-2.0	0.14-0.20	4.5-6.5	Low----------	0.37	4	---	1-3
Nason	10-31	35-50	1.30-1.60	0.6-2.0	0.12-0.19	4.5-5.5	Moderate-----	0.28			
	31-60	---	---	---	---	---	----------	----			
NoA, NoB---------	0-14	2-8	1.55-1.75	6.0-20	0.06-0.11	4.5-6.0	Low----------	0.20	5	---	.5-2
Norfolk	14-60	18-35	1.30-1.45	0.6-2.0	0.10-0.20	4.5-5.5	Low----------	0.24			
	60-70	20-43	1.10-1.40	0.06-2.0	0.10-0.15	4.5-5.5	Low----------	0.24			
PaC2, PaD2, PaE2-	0-3	20-35	1.30-1.50	0.6-2.0	0.10-0.14	4.5-6.5	Low----------	0.24	2	5	.5-1
Pacolet	3-25	35-65	1.30-1.50	0.6-2.0	0.12-0.15	4.5-6.0	Low----------	0.28			
	25-40	15-30	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
	40-65	10-25	1.20-1.50	0.6-2.0	0.08-0.15	4.5-6.0	Low----------	0.28			
Pe----------	0-14	5-15	1.40-1.60	2.0-6.0	0.10-0.20	3.6-5.5	Low----------	0.15	5	---	4-10
Pantego	14-62	18-35	1.30-1.40	0.6-2.0	0.12-0.20	3.6-5.5	Low----------	0.28			
Pg----------	0-19	5-15	1.40-1.60	2.0-6.0	0.10-0.20	3.6-5.5	Low----------	0.15	5	---	4-10
Pantego	19-62	18-35	1.30-1.40	0.6-2.0	0.12-0.20	3.6-5.5	Low----------	0.28			
PnA, PnB, PnC----	0-14	2-10	1.35-1.75	>6.0	0.03-0.06	4.5-6.5	Low----------	0.15	4	2	.5-2
Pelion	14-20	18-35	1.40-1.60	0.6-2.0	0.12-0.16	3.6-5.5	Low----------	0.17			
	20-37	25-50	1.40-1.75	0.06-0.6	0.06-0.10	3.6-5.5	Low----------	0.20			
	37-70	10-40	1.40-1.60	0.6-2.0	0.06-0.10	3.6-5.5	Low----------	0.15			
PsA----------	0-6	5-15	1.40-1.70	0.2-2.0	0.11-0.15	4.5-6.5	Low----------	0.24	5	3	.5-3
Persanti	6-65	30-60	1.20-1.50	0.06-0.2	0.12-0.15	3.6-5.5	Moderate-----	0.20			
PxE----------	0-4	10-25	1.25-1.45	2.0-6.0	0.12-0.20	5.1-7.3	Low----------	0.37	3	---	.5-2
Poindexter	4-10	20-35	1.35-1.45	0.6-2.0	0.13-0.19	5.1-7.3	Low----------	0.24			
	10-25	10-35	1.30-1.55	2.0-6.0	0.08-0.15	4.5-6.5	Low----------	0.24			
	25-40	---	---	---	---	---	----------	----			

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Map symbol and soil name	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
								K	T		
	In	Pct	g/cc	In/hr	In/in	pH					Pct
Qz Quartzipsamments	0-60	1-14	1.35-1.60	>6.0	0.02-0.11	4.5-7.3	Low	0.10	5	2	<1
Ra Rains	0-14	5-20	1.30-1.60	2.0-6.0	0.10-0.14	4.5-6.5	Low	0.20	5	3	1-6
	14-44	18-35	1.30-1.50	0.6-2.0	0.11-0.15	4.5-5.5	Low	0.24			
	44-68	18-40	1.30-1.50	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.28			
RoD, RoF Rion	0-7	5-20	1.30-1.50	2.0-6.0	0.07-0.11	4.5-6.5	Low	0.20	3	---	.5-2
	7-26	18-35	1.30-1.50	0.6-2.0	0.07-0.14	4.5-6.5	Low	0.17			
	26-60	2-20	1.30-1.50	2.0-6.0	0.05-0.11	4.5-6.5	Low	0.17			
SuA Summerton	0-10	10-18	1.40-1.60	0.6-6.0	0.09-0.12	4.5-6.5	Low	0.28	5	3	<1
	10-75	35-70	1.30-1.50	0.2-0.6	0.10-0.14	3.6-5.5	Low	0.28			
Tc: Toccoa	0-9	2-15	1.40-1.55	2.0-6.0	0.09-0.12	5.1-6.5	Low	0.10	4	---	1-2
	9-60	2-19	1.40-1.50	2.0-6.0	0.09-0.12	5.1-6.5	Low	0.10			
Cartecay	0-9	20-35	1.25-1.45	2.0-6.0	0.12-0.16	5.1-6.5	Low	0.32	5	---	2-3
	9-53	8-18	1.30-1.50	2.0-6.0	0.09-0.12	5.1-6.5	Low	0.24			
	53-60	2-16	1.30-1.55	6.0-20	0.06-0.09	5.1-6.5	Low	0.15			
To Toccoa	0-9	2-15	1.40-1.55	2.0-6.0	0.09-0.12	5.1-6.5	Low	0.10	4	---	1-2
	9-60	2-19	1.40-1.50	2.0-6.0	0.09-0.12	5.1-6.5	Low	0.10			
VaC, VaD Vaucluse	0-5	2-10	1.30-1.60	6.0-20	0.04-0.08	4.5-6.0	Low	0.15	3	2	<1
	5-15	18-35	1.35-1.75	0.6-6.0	0.10-0.15	3.6-5.5	Low	0.24			
	15-54	18-45	1.75-1.95	0.06-0.6	0.04-0.08	3.6-5.5	Low	0.24			
	54-65	5-30	1.55-1.90	2.0-6.0	0.04-0.08	3.6-5.5	Low	0.17			
WaB Wagram	0-31	1-7	1.60-1.75	6.0-20	0.03-0.07	4.5-6.0	Low	0.10	5	---	.5-2
	31-70	10-35	1.35-1.60	0.6-2.0	0.12-0.16	4.5-6.0	Low	0.20			
We Wehadkee	0-9	15-40	1.35-1.50	0.6-2.0	0.15-0.24	4.5-6.5	Low	0.32	5	---	2-5
	9-46	18-35	1.30-1.50	0.6-2.0	0.16-0.20	4.5-6.5	Low	0.32			
	46-70	---	---	---	---	---	---	---			
WkA, WkB, WkD Wickham	0-14	8-15	1.45-1.65	2.0-6.0	0.11-0.16	4.5-6.0	Low	0.24	5	---	.5-2
	14-60	18-25	1.30-1.40	0.6-2.0	0.12-0.17	4.5-6.0	Low	0.24			
WnB, WnC Winnsboro	0-9	10-25	1.20-1.40	0.6-2.0	0.15-0.20	5.1-6.5	Low	0.32	3	5	.5-2
	9-27	35-60	1.20-1.50	0.06-0.2	0.15-0.20	6.1-7.8	High	0.20			
	27-46	15-35	1.30-1.60	0.2-0.6	0.15-0.20	6.1-7.8	Low	0.28			
	46-60	---	---	---	---	---	---	---			

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "brief," "apparent," and "perched" are explained in the text. The symbol > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated]

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
AeB, AeC--------- Ailey	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
ApB, ApC, ApD---- Alpin	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High.
AtA-------------- Altavista	C	None--------	---	---	1.5-2.5	Apparent	Dec-Mar	>60	---	Moderate	Moderate.
BaB, BaC--------- Blanton	A	None--------	---	---	5.0-6.0	Perched	Dec-Mar	>60	---	High-----	High.
Ca--------------- Cantey	D	None--------	---	---	0-1.0	Apparent	Nov-Apr	>60	---	High-----	High.
CeB, CeC--------- Cecil	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
Ch--------------- Chewacla	C	Occasional	Brief-----	Nov-Apr	0.5-1.5	Apparent	Nov-Apr	>60	---	High-----	Moderate.
Co--------------- Congaree	B	Frequent---	Brief-----	Nov-Apr	2.5-4.0	Apparent	Nov-Apr	>60	---	Moderate	Moderate.
Do--------------- Dorovan	D	Frequent---	Very long	Jan-Dec	+1-0.5	Apparent	Jan-Dec	>60	---	High-----	High.
DuB, DuC--------- Durham	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate.
FaA, FaB--------- Faceville	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
GeB, GeC--------- Georgeville	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
GoA-------------- Goldsboro	B	None--------	---	---	2.0-3.0	Apparent	Dec-Apr	>60	---	Moderate	High.
Gr--------------- Grady	D	None--------	---	---	0-1.0	Apparent	Dec-Jun	>60	---	High-----	High.
GvB, GvC--------- Greenville	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High.
HeB-------------- Helena	C	None--------	---	---	1.5-2.5	Perched	Jan-Apr	48-60	Soft	High-----	High.
HrB, HrC--------- Herndon	B	None--------	---	---	>6.0	---	---	>60	---	High-----	High.
IeB-------------- Iredell	C/D	None--------	---	---	1.0-2.0	Perched	Dec-Apr	>60	---	High-----	Low.
Jo--------------- Johnston	D	Frequent---	Brief to long.	Nov-Jul	+1-1.5	Apparent	Nov-Jun	>60	---	High-----	High.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
LaB, LaC, LaD----- Lakeland	A	None-------	---	---	>6.0	---	---	>60	---	Low------	Moderate.
LuB, LuC, LuD----- Lugoff	B	None-------	---	---	>6.0	---	---	>60	---	High-----	High.
MaB2, MaC2, MaE2, MaF2---------- Madison	B	None-------	---	---	>6.0	---	---	>60	---	High-----	Moderate.
NaC, NaE---------- Nason	C	None-------	---	---	>6.0	---	---	40-60	Soft	Moderate	High.
NoA, NoB---------- Norfolk	B	None-------	---	---	4.0-6.0	Apparent	Jan-Mar	>60	---	Moderate	High.
PaC2, PaD2, PaE2-- Pacolet	B	None-------	---	---	>6.0	---	---	>60	---	High-----	High.
Pe, Pg---------- Pantego	B/D	None-------	---	---	0-1.5	Apparent	Dec-May	>60	---	High-----	High.
PnA, PnB, PnC----- Pelion	B/D	None-------	---	---	1.0-2.5	Perched	Nov-Apr	>60	---	High-----	High.
PsA---------- Persanti	C	None-------	---	---	2.0-3.5	Apparent	Dec-Apr	>60	---	High-----	High.
PxE---------- Poindexter	B	None-------	---	---	>6.0	---	---	40-60	Hard	Moderate	Moderate.
Qz---------- Quartzipsamments	A	None-------	---	---	>6.0	---	---	>60	---	---	---
Ra---------- Rains	B/D	None-------	---	---	0-1.0	Apparent	Nov-Apr	>60	---	High-----	High.
RoD, RoF---------- Rion	B	None-------	---	---	>6.0	---	---	>60	---	Moderate	High.
SuA---------- Summerton	B	None-------	---	---	>6.0	---	---	>60	---	High-----	High.
Tc:											
Toccoa----------	B	Occasional	Brief-----	Jan-Dec	2.5-5.0	Apparent	Dec-Apr	>60	---	Low------	Moderate.
Cartecay---------	C	Occasional	Brief-----	Dec-Mar	0.5-1.5	Apparent	Jan-Apr	>60	---	Low------	Moderate.
To---------- Toccoa	B	Occasional	Brief-----	Jan-Dec	2.5-5.0	Apparent	Dec-Apr	>60	---	Low------	Moderate.
VaC, VaD---------- Vaucluse	C	None-------	---	---	>6.0	---	---	>60	---	Low------	High.
WaB---------- Wagram	A	None-------	---	---	>6.0	---	---	>60	---	Low------	High.
We---------- Wehadkee	D	Frequent---	Brief-----	Nov-Jun	0-2.5	Apparent	Dec-May	>60	---	High-----	Moderate.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Map symbol and soil name	Hydrologic group	Flooding			High water table			Bedrock		Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Uncoated steel	Concrete
					Ft			In			
WkA, WkB, WkD----- Wickham	B	None-------	---	---	>6.0	---	---	>60	---	Moderate	High.
WnB, WnC---------- Winnsboro	D	None-------	---	---	>6.0	---	---	40-60	Soft	High-----	Low.

TABLE 17.--ENGINEERING INDEX TEST DATA

[Dashes indicate data not available. NP means nonplastic]

Soil name, sample number, horizon, and depth in inches	Classification		Grain-size distribution							Liquid limit	Plasticity index
			Percentage passing sieve--				Percentage smaller than--				
	AASHTO	Unifed	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm		
Congaree: (S77SC055)											
Ap-------- 0-10	A-4(8)	ML	---	100	98	73	---	30	---	30	5
C2-------- 25-37	A-4(6)	ML	---	100	97	65	---	34	---	29	6
Georgeville: (S78SC055)											
A--------- 0-5	A-4(5)	ML	94	84	84	72	---	32	---	32	7
Bt1------- 5-26	A-7-5(20)	MH	100	99	98	96	---	80	---	79	40
BC2------- 43-58	A-7-5(16)	MH	---	100	100	96	---	68	---	60	21
Norfolk: (S79SC055)											
Ap-------- 0-8	A-4(0)	SM	---	100	80	36	---	11	---	---	NP
Bt1------- 14-42	A-6(4)	SC	---	100	84	50	---	30	---	28	12
Rains: (S79SC055)											
A1-------- 0-5	A-4(3)	SM	---	100	74	47	---	26	---	27	4
Btg2------ 29-44	A-4(3)	SC	---	100	65	47	---	32	---	22	10
Toccoa: (S79SC055)											
Ap-------- 0-9	A-2-4)	SM	---	100	73	23	---	9	---	---	NP
C4-------- 39-49	A-4(5)	ML	---	100	100	59	---	16	---	---	NP
Wagram: (S78SC055)											
Ap-------- 0-8	A-2-4	SM	---	100	41	14	---	7	---	---	NP
Bt1------- 31-42	A-2-6(1)	SC	100	99	34	28	---	24	---	39	15
Wickham: (S79SC055)											
E--------- 5-14	A-4(3)	SM	---	100	86	48	---	18	---	---	NP
Bt2------- 23-51	A-6(8)	CL	---	100	91	61	---	42	---	39	17

TABLE 18.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
*Ailey	Loamy, siliceous, thermic Arenic Hapludults
Alpin	Thermic, coated Typic Quartzipsamments
Altavista	Fine-loamy, mixed, thermic Aquic Hapludults
Blanton	Loamy, siliceous, thermic Grossarenic Paleudults
Cantey	Clayey, kaolinitic, thermic Typic Albaquults
Cartecay	Coarse-loamy, mixed, nonacid, thermic Aquic Udifluvents
Cecil	Clayey, kaolinitic, thermic Typic Hapludults
Chewacla	Fine-loamy, mixed, thermic Fluvaquentic Dystrochrepts
Congaree	Fine-loamy, mixed, nonacid, thermic Typic Udifluvents
Dorovan	Dysic, thermic Typic Medisaprists
Durham	Fine-loamy, siliceous, thermic Typic Hapludults
Faceville	Clayey, kaolinitic, thermic Typic Paleudults
Georgeville	Clayey, kaolinitic, thermic Typic Hapludults
Goldsboro	Fine-loamy, siliceous, thermic Aquic Paleudults
Grady	Clayey, kaolinitic, thermic Typic Paleaquults
*Greenville	Clayey, kaolinitic, thermic Rhodic Paleudults
Helena	Clayey, mixed, thermic Aquic Hapludults
Herndon	Clayey, kaolinitic, thermic Typic Hapludults
Iredell	Fine, montmorillonitic, thermic Typic Hapludalfs
Johnston	Coarse-loamy, siliceous, acid, thermic Cumulic Humaquepts
Lakeland	Thermic, coated Typic Quartzipsamments
Lugoff	Clayey, kaolinitic, thermic Typic Paleudults
Madison	Clayey, kaolinitic, thermic Typic Hapludults
Nason	Clayey, mixed, thermic Typic Hapludults
Norfolk	Fine-loamy, siliceous, thermic Typic Paleudults
Pacolet	Clayey, kaolinitic, thermic Typic Hapludults
Pantego	Fine-loamy, siliceous, thermic Umbric Paleaquults
Pelion	Fine-loamy, siliceous, thermic Aquic Hapludults
Persanti	Clayey, kaolinitic, thermic Aquic Paleudults
Poindexter	Fine-loamy, mixed, thermic Typic Hapludalfs
Quartzipsamments	Quartzipsamments
Rains	Fine-loamy, siliceous, thermic Typic Paleaquults
Rion	Fine-loamy, mixed, thermic Typic Hapludults
Summerton	Clayey, kaolinitic, thermic Typic Paleudults
Toccoa	Coarse-loamy, mixed, nonacid, thermic Typic Udifluvents
Vaucluse	Fine-loamy, siliceous, thermic Typic Hapludults
Wagram	Loamy, siliceous, thermic Arenic Paleudults
Wehadkee	Fine-loamy, mixed, nonacid, thermic Typic Fluvaquents
Wickham	Fine-loamy, mixed, thermic Typic Hapludults
Winnsboro	Fine, mixed, thermic Typic Hapludalfs

* This soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series.

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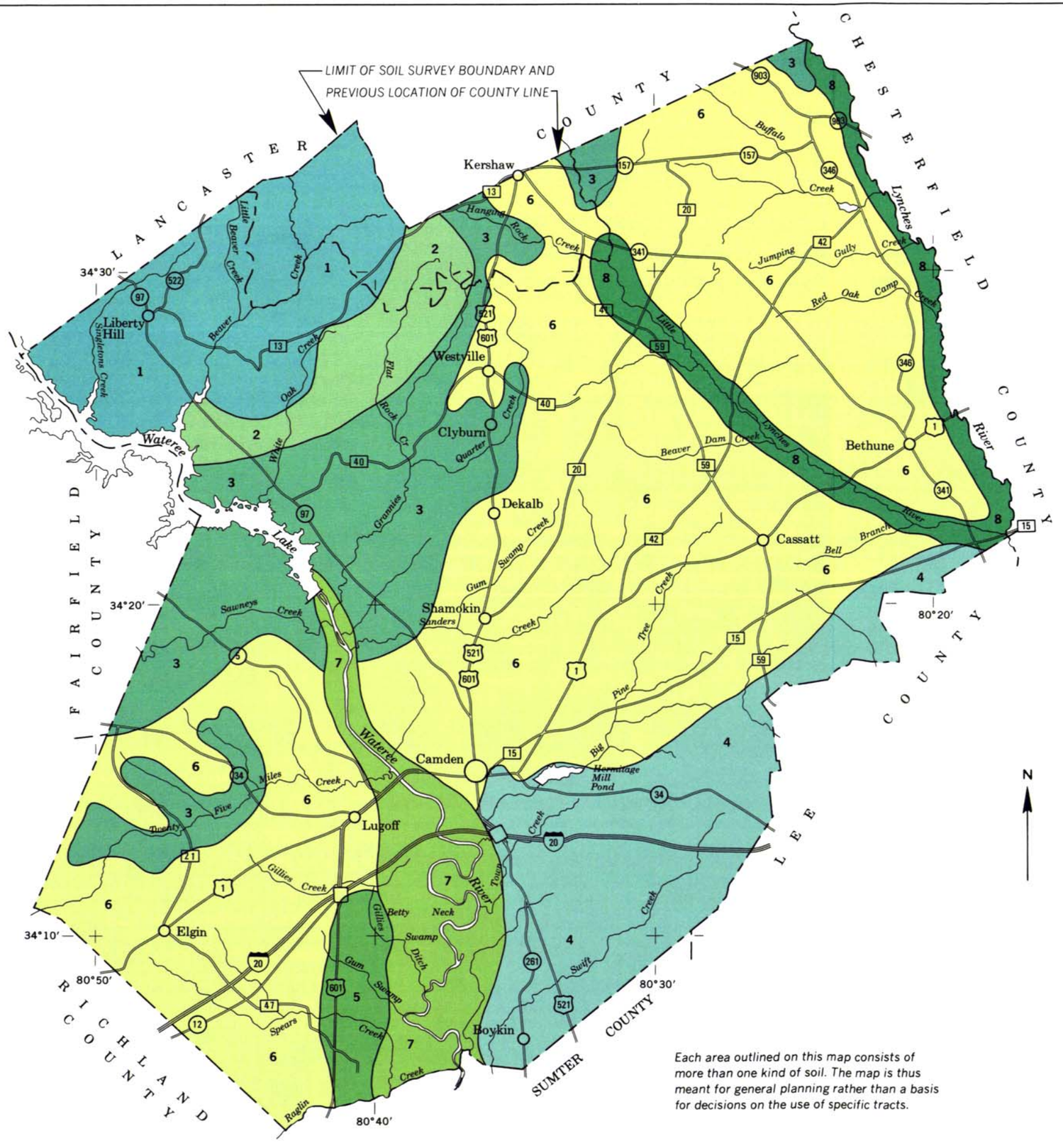


LEGEND

SOILS OF THE PIEDMONT THAT FORMED IN GRANITE RESIDUUM

1 Madison-Cecil-Pacolet: Moderately permeable soils that have a loamy surface layer and a clayey subsoil that can have large amounts of mica; on broad to medium ridges and side slopes

2 Durham-Cecil-Pacolet: Moderately slowly permeable or moderately permeable soils that have a loamy surface layer and a loamy or clayey subsoil; on broad to medium ridges and side slopes

SOILS OF THE PIEDMONT THAT FORMED IN CAROLINA SLATE RESIDUUM

3 Nason-Georgeville-Herndon: Moderately permeable soils that have a loamy surface layer and a clayey subsoil; on broad to narrow ridges and side slopes

SOILS OF THE COASTAL PLAIN THAT FORMED IN LOAMY AND CLAYEY MARINE SEDIMENTS

4 Pelion-Goldsboro-Persanti: Moderately permeable and slowly permeable soils that have a sandy or loamy surface layer and a loamy or clayey subsoil; on smooth slopes in slight depressions or on broken side slopes

5 Persanti-Cantey: Slowly permeable soils that have a loamy surface layer and a loamy or clayey subsoil; in low and moderately low areas

SOILS OF THE SAND HILLS THAT FORMED IN SANDY AND LOAMY SEDIMENTS

6 Lakeland-Blanton-Alpin: Very rapidly permeable and moderately permeable soils that are sandy throughout or that have a sandy surface layer and a sandy and loamy subsoil; on broad ridgetops and side slopes

SOILS OF THE FLOOD PLAINS THAT FORMED IN ALLUVIAL SEDIMENTS

7 Chewacla-Congaree: Moderately permeable soils that have a loamy surface layer and a loamy subsoil or underlying material; on flood plains

8 Johnston-Pantego: Moderately rapidly permeable and moderately permeable soils that have a loamy surface layer and sandy underlying material or a loamy subsoil; on flood plains and in shallow depressions

COMPILED 1989

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SOUTH CAROLINA AGRICULTURAL EXPERIMENT STATION
SOUTH CAROLINA LAND RESOURCES CONSERVATION COMMISSION

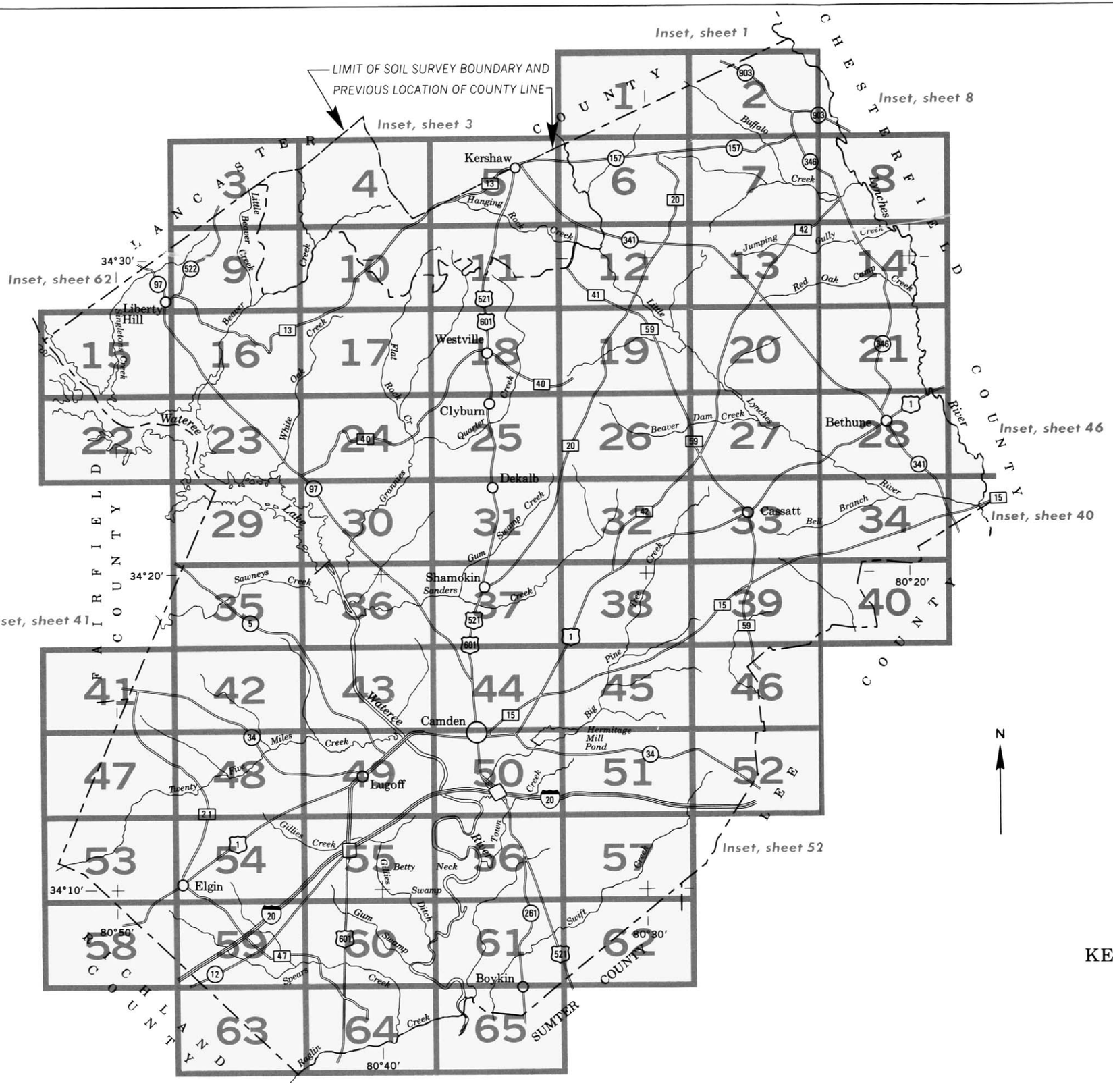
GENERAL SOIL MAP

KERSHAW COUNTY AREA, SOUTH CAROLINA

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km



INDEX TO MAP SHEETS

KERSHAW COUNTY AREA, SOUTH CAROLINA

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

SOIL LEGEND

The first capital letter is the initial one of the soil name. The second position is used to further identify the map units and to identify additional mapping units that have the same initial capital letter. The second position is a lower case letter. The third position, if used, is a capital letter and connotes slope class. The number 2 added to the symbol indicates the soil is eroded.
Symbols without a slope letter are for nearly level soils.

SYMBOL	NAME
AeB	Ailey sand, 0 to 6 percent slopes
AeC	Ailey sand, 6 to 10 percent slopes
ApB	Alpin sand, 0 to 6 percent slopes
ApC	Alpin sand, 6 to 10 percent slopes
ApD	Alpin sand, 10 to 15 percent slopes
AtA	Altavista loam, 0 to 2 percent slopes
BaB	Blanton sand, 0 to 6 percent slopes
BaC	Blanton sand, 6 to 10 percent slopes
Ca	Cantey loam
CeB	Cecil sandy loam, 2 to 6 percent slopes
CeC	Cecil sandy loam, 6 to 10 percent slopes
Ch	Chewacla loam
Co	Congaree loam
Do	Dorovan muck
DuB	Durham loamy sand, 2 to 6 percent slopes
DuC	Durham loamy sand, 6 to 10 percent slopes
FaA	Faceville loamy sand, 0 to 2 percent slopes
FaB	Faceville loamy sand, 2 to 6 percent slopes
GeB	Georgeville loam, 2 to 6 percent slopes
GeC	Georgeville loam, 6 to 10 percent slopes
GoA	Goldsboro loamy sand, 0 to 2 percent slopes
Gr	Grady loam
GvB	Greenville sandy loam, 2 to 6 percent slopes
GvC	Greenville sandy loam, 6 to 10 percent slopes
HeB	Helena sandy loam, 2 to 6 percent slopes
HrB	Herndon loam, 2 to 6 percent slopes
HrC	Herndon loam, 6 to 10 percent slopes
IeB	Iredell loam, 1 to 6 percent slopes
Jo	Johnston loam
LaB	Lakeland sand, 0 to 6 percent slopes
LaC	Lakeland sand, 6 to 10 percent slopes
LaD	Lakeland sand, 10 to 15 percent slopes
LuB	Lugoff gravelly loamy sand, 2 to 6 percent slopes
LuC	Lugoff gravelly loamy sand, 6 to 10 percent slopes
LuD	Lugoff gravelly loamy sand, 10 to 15 percent slopes
MaB2	Madison sandy clay loam, 2 to 6 percent slopes, eroded
MaC2	Madison sandy clay loam, 6 to 10 percent slopes, eroded
MaE2	Madison sandy clay loam, 10 to 25 percent slopes, eroded
MaF2	Madison sandy clay loam, 25 to 60 percent slopes, eroded
NaC	Nason loam, 6 to 10 percent slopes
NaE	Nason loam, 10 to 25 percent slopes
NoA	Norfolk loamy sand, 0 to 2 percent slopes
NoB	Norfolk loamy sand, 2 to 6 percent slopes
PaC2	Pacolet sandy clay loam, 6 to 10 percent slopes, eroded
PaD2	Pacolet sandy clay loam, 10 to 15 percent slopes, eroded
PaE2	Pacolet sandy clay loam, 15 to 25 percent slopes, eroded
Pe	Pantego loam
Pg	Pantego loam, overwash
PnA	Pelion loamy sand, 0 to 2 percent slopes
PnB	Pelion loamy sand, 2 to 6 percent slopes
PnC	Pelion loamy sand, 6 to 10 percent slopes
PsA	Persanti sandy loam, 0 to 2 percent slopes
PxE	Poindexter silt loam, 10 to 25 percent slopes
Qz	Quartzipsamments, gently rolling
Ra	Rains sandy loam
RoD	Rion gravelly sandy loam, 6 to 15 percent slopes
RoF	Rion gravelly sandy loam, 15 to 40 percent slopes
SuA	Summerton sandy loam, 0 to 2 percent slopes
Tc	Toccoa-Cartecay complex
To	Toccoa sandy loam
VaC	Vaucluse loamy sand, 6 to 10 percent slopes
VaD	Vaucluse loamy sand, 10 to 15 percent slopes
WaB	Wagram sand, 0 to 6 percent slopes
We	Wehadkee silt loam
WkA	Wickham fine sandy loam, 0 to 2 percent slopes
WkB	Wickham fine sandy loam, 2 to 6 percent slopes
WkD	Wickham fine sandy loam, 6 to 15 percent slopes
WnB	Winnsboro loam, 2 to 6 percent slopes
WnC	Winnsboro loam, 6 to 10 percent slopes
W	Water

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

National, state or province

County or parish

Minor civil division

Reservation (national forest or park, state forest or park, and large airport)

Land grant

Limit of soil survey (label)

Field sheet matchline and neatline

AD HOC BOUNDARY (label)

Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK

LAND DIVISION CORNER (sections and land grants)

ROADS

Divided (median shown if scale permits)

Other roads

Trail

ROAD EMBLEM & DESIGNATIONS

Interstate

Federal

State

County, farm or ranch

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

Without road

With road

With railroad

DAMS

Large (to scale)

Medium or Small

PITS

Gravel pit

Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

Farmstead, house (omit in urban areas)

Church

School

Indian mound (label)

Located object (label)

Tank (label)

Wells, oil or gas

Windmill

Kitchen midden

WATER FEATURES

DRAINAGE

Perennial, double line

Perennial, single line

Intermittent

Drainage end

Canals or ditches

Double-line (label)

Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

Perennial

Intermittent

MISCELLANEOUS WATER FEATURES

Marsh or swamp

Spring

Well, artesian

Well, irrigation

Wet spot

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS

Bedrock (points down slope)

Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

DEPRESSION OR SINK

SOIL SAMPLE (normally not shown)

MISCELLANEOUS

Blowout

Clay spot

Gravelly spot

Gumbo, slick or scabby spot (sodic)

Dumps and other similar non soil areas

Prominent hill or peak

Rock outcrop (includes sandstone and shale)

Saline spot

Sandy spot

Severely eroded spot

Slide or slip (tips point upslope)

Stony spot, very stony spot

Small ponds (As much as 2 acres)

Arents (As much as 5 acres)

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 1

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 1

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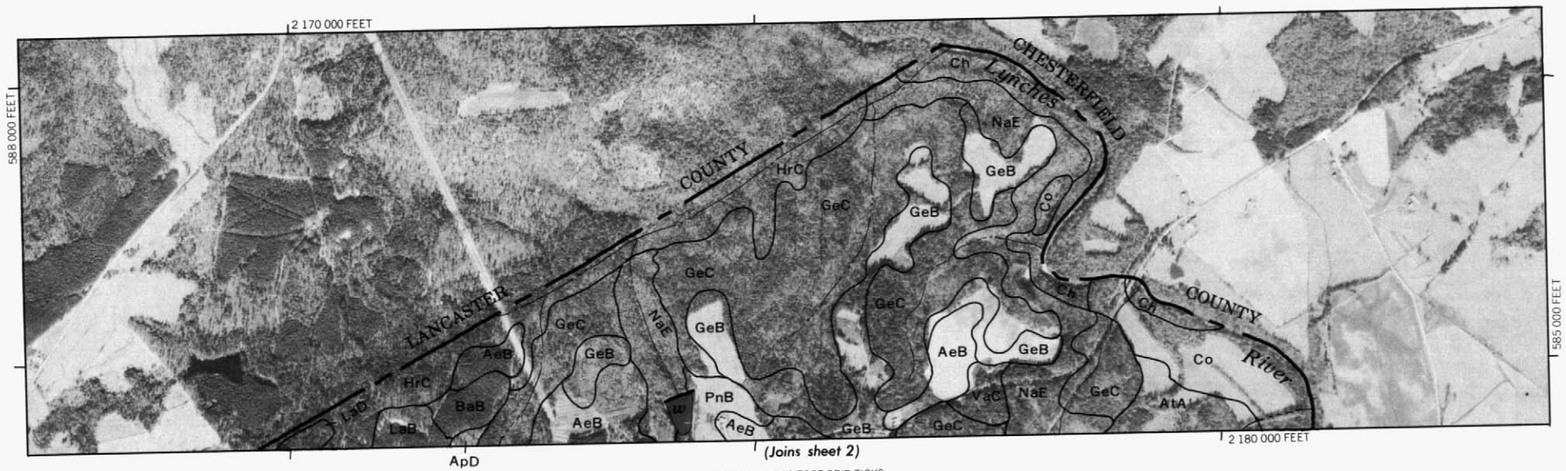

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 10

10

N

1 Mile 5000 Feet

Scale 1:20000

(Joins sheet 4)

(Joins sheet 9)

(Joins sheet 17)

(Joins sheet 11)

2 105 000 FEET

1 550 000 FEET

1 535 000 FEET

2 190 000 FEET

Coats Cross Roads

Rock Creek

Flat

Tyninham

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KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 10

N

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 11

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(Joins sheet 5)

(Joins sheet 10)

(Joins sheet 12)

(Joins sheet 18)

2,160,000 FEET

KERSHAW AIRPORT

Hanging Rock Creek

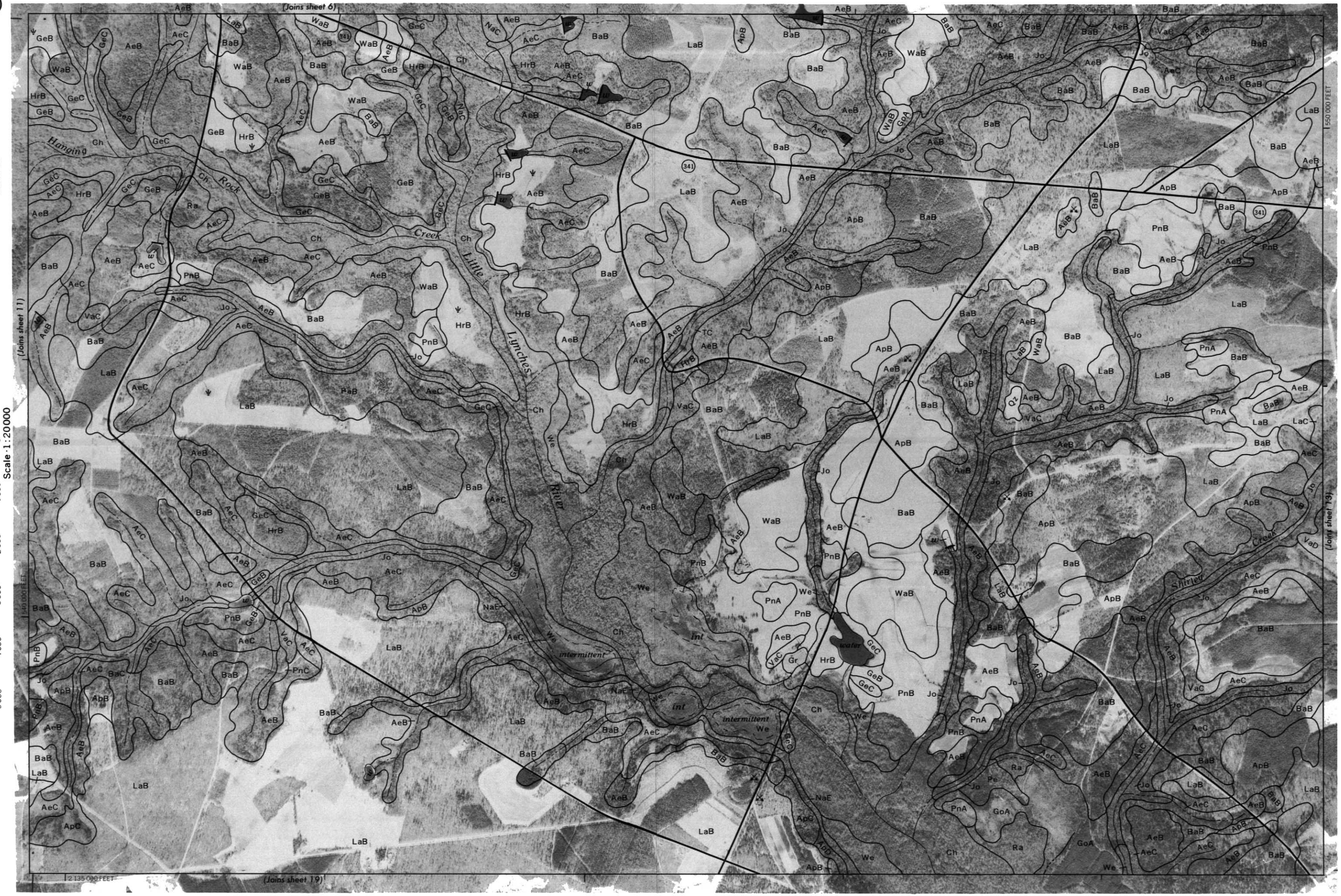
Rock Creek

Little Flat Rock Creek

521
601

1 Mile
5000 Feet

Scale 1:20000



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KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 12

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 13

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14

N

Scale 1:20000

1 Mile 5000 Feet

0 0 1/4 1/2 3/4 1 1000 2000 3000 4000 5000

(Joins sheet 8)

(Joins sheet 13)

(Joins sheet 21)

2 205 000 FEET

2 185 000 FEET

540 000 FEET

1 520 000 FEET

Jumping Gully

Red Oak Camp Creek

Vac Creek

HOUGH MILLPOND

CHESTERFIELD COUNTY

Lynches River

water

346

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 14

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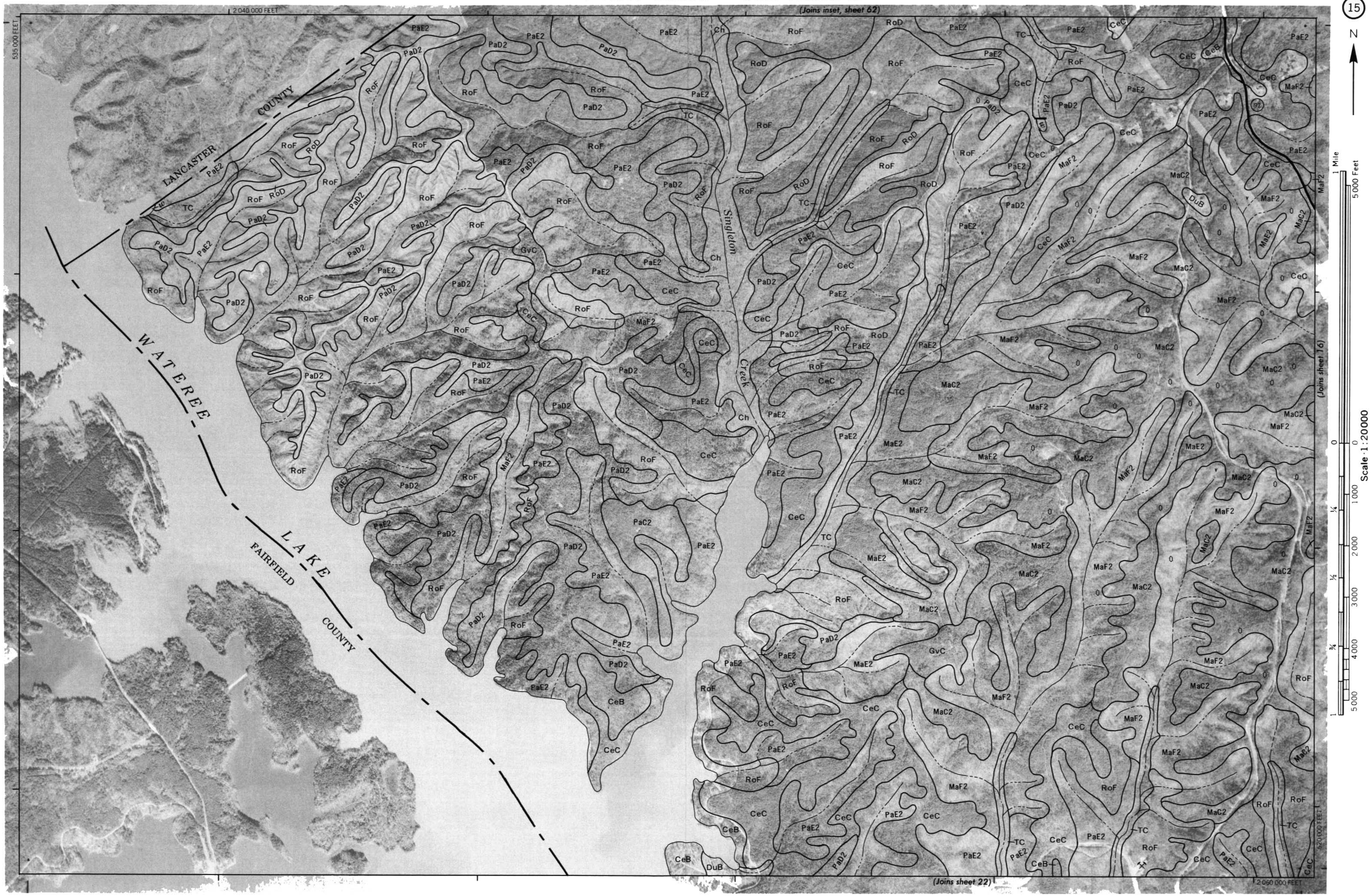

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 15

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16

N

1 Mile

5000 Feet

Scale 1:20000

(Joins sheet 9)

(Joins sheet 15)

(Joins sheet 23)

(Joins sheet 17)

2 085 000 FEET

2 065 000 FEET

Beaver Creek

LAKE WATEREE

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KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 16

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 17

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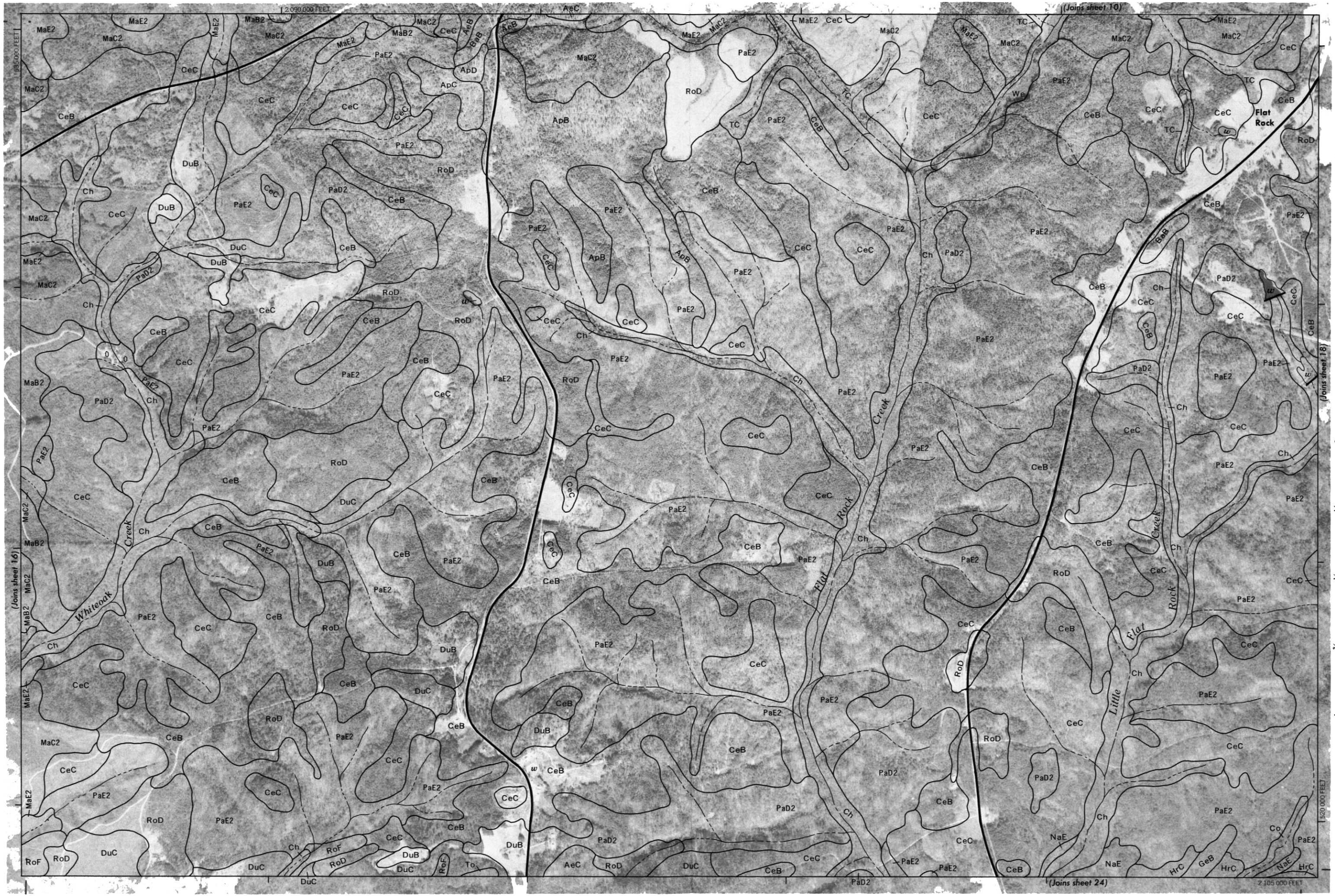

17

N

Scale · 1:20000

1 Mile
5000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1

18

N

1 Mile
5000 Feet

Scale 1:20000

0 0 ¼ ½ ¾ 1

1000 2000 3000 4000 5000

(Joins sheet 17)

(Joins sheet 19)

(Joins sheet 25)

2 130 000 FEET

530 000 FEET

2 120 000 FEET

2 110 000 FEET

Westville

Little Rock Creek

Dry Branch

SOUTHERN

521
601

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KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 18

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 19

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(Joins sheet 12)

2 135 000 FEET

936 000 FEET

(Joins sheet 18)

(Joins sheet 26)

2 155 000 FEET

(Joins sheet 20)

520 000 FEET

Little Lynches River

Shirley Cr

Cow Branch

Gully Branch

19

N

1 Mile

5000 Feet

Scale 1:20000

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 2

(2)

N

Scale-1:20000

1 Mile 5000 Feet

0 0

1/4 1000

1/2 2000

3/4 3000

1 4000 5000

(Joins sheet 1)

2 180 000 FEET

(Joins inset, sheet 1)

LANCASTER COUNTY

CHESTERFIELD COUNTY

Lynches River

Buffalo Creek

903 346 157

(Joins sheet 7)

(Joins inset, sheet 8)

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KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 2

20

N

Scale 1:20000

1 Mile 5000 Feet

0 ¼ ½ ¾ 1

0 1000 2000 3000 4000 5000

(Joins sheet 13)

(Joins sheet 19)

(Joins sheet 27)

(Joins sheet 21)

2 180 000 FEET

1 820 000 FEET

2 160 000 FEET

1 835 000 FEET

Little Lynches River

Gully Branch

Mills Creek

BAKERS MILLPOND

LaB ApD BaB AeC PnB Jo ApB BaC VaC AeB LaC PnA PnC Ra PxE Do Ch We WaB SuA NoA VaD LaD ApC

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KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 20

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 21

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 21

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(Joins sheet 14)

(Joins sheet 20)

(Joins sheet 28)

2 185 000 FEET

535 000 FEET

2 205 000 FEET

520 000 FEET

N

1 Mile

5000 Feet

Scale 1:20000

Beard Branch

Hammond Branch

Lynches River

CHESTERFIELD COUNTY

FORD POND

water

ApB LaB BaB GoA WaB Ca Ch AeB NoA NoB Jo LaC VaD AeC ApC PnA PsA PnB VaC We Do

22

N

1 Mile
5000 Feet

0 0

Scale 1:20000

1 ¾ ½ ¼ 0

5 000 4 000 3 000 2 000 1 000 0

(Joins sheet 15)

2 060 000 FEET

RoF

CeB CeC PaD2 PaE2 TC DuB HeB

WATEREE LAKE

FAIRFIELD COUNTY

515 000 FEET

(Joins sheet 23)

505 000 FEET

2 040 000 FEET

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KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 22

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 23

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Coordinate grid ticks and land division corners, if shown, are approximately positioned

(23)

N

1 Mile
5000 Feet

Scale 1:20000

(Joins sheet 22)

(Joins sheet T6)

(Joins sheet 24)

(Joins sheet 29)

2 065 000 FEET

515 000 FEET

2 065 000 FEET

WATEREE LAKE

FAIRFIELD COUNTY

Stillhouse Branch

Whitecoak Creek

water

WATEREE LAKE

24

N

Scale 1:20000

1 Mile 5000 Feet

0 0 1/4 1000 1/2 2000 3/4 3000 1 4000 5000 FEET

(Joins sheet 17)

(Joins sheet 23)

(Joins sheet 30)

(Joins sheet 25)

2 090 000 FEET

2 105 000 FEET

2 105 000 FEET

1 905 000 FEET

Flat Rock Creek

Little Flat Rock Cr.

Quarter Creek

Granuus

Fort Hill

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 24

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 25

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

26

N

1 Mile
5000 Feet

Scale 1:20000

(Joins sheet 25)

(Joins sheet 79)

(Joins sheet 27)

(Joins sheet 32)

2 155 000 FEET

505 000 FEET

2 135 000 FEET

LaB BaB BaC ApB AeB AeC Do VaD VaB Jo PnB PnA PnC PaB PaC FaB NoA SuA Ra

water

Beaverdam Creek

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 26

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 27

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 28

28

N

Scale 1:20000

1 Mile 5000 Feet

0 0 1/4 1/2 3/4 1

1 000 2 000 3 000 4 000 5 000

(Joins sheet 21)

(Joins sheet 27)

(Joins sheet 34)

(Joins inset, sheet 46)

2 205 000 FEET

2 195 000 FEET

500 000 FEET

515 000 FEET

Bethune

Lynches River

CHESTERFIELD COUNTY

Little Lynches River

COAST LINE

SEABOARD

AeB AeC ApB BaB BaC Ca Do GoA LaB LaC NoA NoB PnA PnB PnC Pe PsA Qz Ra SuA VaC WaB We

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 28

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 29

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 29

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners if shown, are approximately positioned

29

N

Scale 1:20000

1 Mile
5000 Feet

2 065 000 FEET
1 500 000 FEET
2 085 000 FEET
1 480 000 FEET

(Joins sheet 23)
(Joins sheet 30)
(Joins sheet 35)

WATEREE LAKE

SHAW A.F.B. RECREATION AREA

FAIRFIELD COUNTY

Buck Hill

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 3

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximately positioned

2 065 000 FEET

2 090 000 FEET

565 000 FEET

570 000 FEET

LANCASTER COUNTY

MaE2 MaC2 CeC DuB CeB PaC2 MaB2 DuC AaB BaB

(Joins sheet 4)

2 100 000 FEET

5000-FOOT GRID TICKS

Stonesboro

522

Beaver Creek

Little Beaver Creek

Shoverdath Br

TC

HeB RoB Ch PaE2 PaF2 MaF2

(Joins sheet 9)

2 085 000 FEET

N

1 Mile 5000 Feet

Scale 1:20000

1 000 2 000 3 000 4 000 5 000

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 30

30

N

Scale 1:20000

1 Mile 5000 Feet

0 0 ¼ 1000 ½ 2000 ¾ 4000 1 5000

(Joins sheet 24)

(Joins sheet 29)

(Joins sheet 31)

(Joins sheet 36)

2 110 000 FEET

500 000 FEET

490 000 FEET

2 090 000 FEET

WATEREE LAKE

Granny's Quarter Creek

Eagles Nest

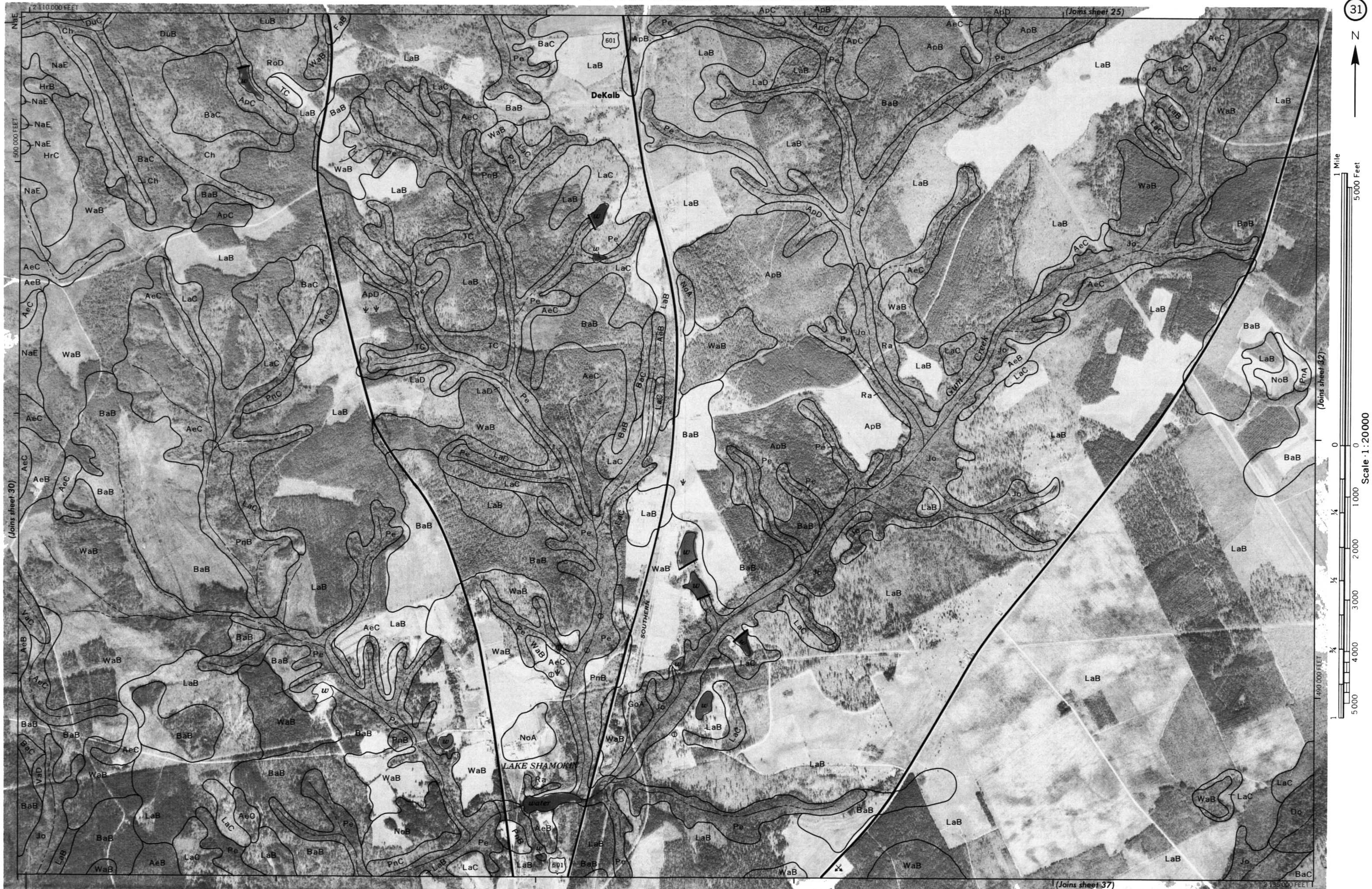
Cantey Hill

Rocky Branch

water

This map was compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 30



KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 31

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 32

32

N

1 Mile

5000 Feet

Scale 1:20000

1 inch = 1000 feet

1/4 = 2000

1/2 = 3000

3/4 = 4000

1 = 5000

(Joins sheet 26)

(Joins sheet 31)

(Joins sheet 33)

(Joins sheet 38)

2 155 000 FEET

2 150 000 FEET

2 135 000 FEET

LaB BaB AeB AeC VaC Do LaC PnA PnB PnC BaC NoB GoA Ra WaB SuA Jo Qz ApB

water

Beaverdam Br

Big Pine Tree Creek

Saddler Creek

SEABOARD COAST LINE

LLEWELLYN MILLPOND

This map is compiled on 1974 aerial photographs by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 32

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 33

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 33

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 34

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 35

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

36

N

Scale 1:20000

1 Mile 0 ¼ ½ ¾ 1

5000 Feet 0 1000 2000 3000 4000 5000

(Joins sheet 30)

(Joins sheet 35)

(Joins sheet 43)

(Joins sheet 37)

2 410 000 FEET

1 475 000 FEET

2 090 000 FEET

WATEREE LAKE

WATEREE RIVER

Grannys Quarter Creek

Rocky Branch Creek

Swinneys Bee Br Creek

Sanders Creek

97

water

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 36

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 37

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 37

This map was compiled on 1914 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximately positioned

37

N

Scale 1:20000

1 Mile

5000 Feet

2 110 000 FEET

2 135 000 FEET

1485 000 FEET

1475 000 FEET

(Joins sheet 31)

(Joins sheet 36)

(Joins sheet 44)

Shamokin

VAUGHANS MILLPOND

COLONIAL LAKE

Gum Creek

Sanders Creek

SOUTHERN

SEABOARD COAST LINE

water

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 38

38

N

1 Mile

5000 Feet

Scale 1:20000

(Joins sheet 32)

(Joins sheet 37)

(Joins sheet 39)

(Joins sheet 45)

2 155 000 FEET

1 485 000 FEET

1 475 000 FEET

2 130 000 FEET

Sanders Creek

Shepard

SEABOARD COAST LINE

Hyco

Big Pine Tree Branch

Thoroughfare Branch

Berkley Branch

water

KERSHAW COUNTY RECREATIONAL PARK

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 38

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 39

39

N

(Joins sheet 38)

(Joins sheet 40)

(Joins sheet 45)

2 160 000 FEET

1 485 000 FEET

1 475 000 FEET

2 180 000 FEET

Thoroughfare Branch

water

LEE COUNTY

1 Mile

5 000 Feet

Scale 1:20000

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 39

This map was compiled on 1974 aerial photography by the U.S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

4

N

1 Mile

5000 Feet

Scale 1:20000

(Joins inset, sheet 3)

2 105 000 FEET

595 000 FEET

(Joins sheet 3)

355 000 FEET

(Joins sheet 5)

(Joins sheet 10)

2 090 000 FEET

COUNTY

LANCASTER

COUNTY

LANCASTER

Tranham Creek

water

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 4

(40)

N

1 Mile
5000 Feet
0
0
Scale 1:20000
1000
2000
3000
4000
5000

(Joins sheet 34)

2 205 000 FEET

485 000 FEET

(Joins sheet 39)

(Joins inset, sheet 46)

2 215 000 FEET

500 000 FEET

RATLIFF MILLPOND

Black Creek

Little Lynches River

Lynches River

COUNTY

CHESTERFIELD COUNTY

LEE COUNTY

(Joins sheet 34)

495 000 FEET

475 000 FEET

2 185 000 FEET

2 210 000 FEET

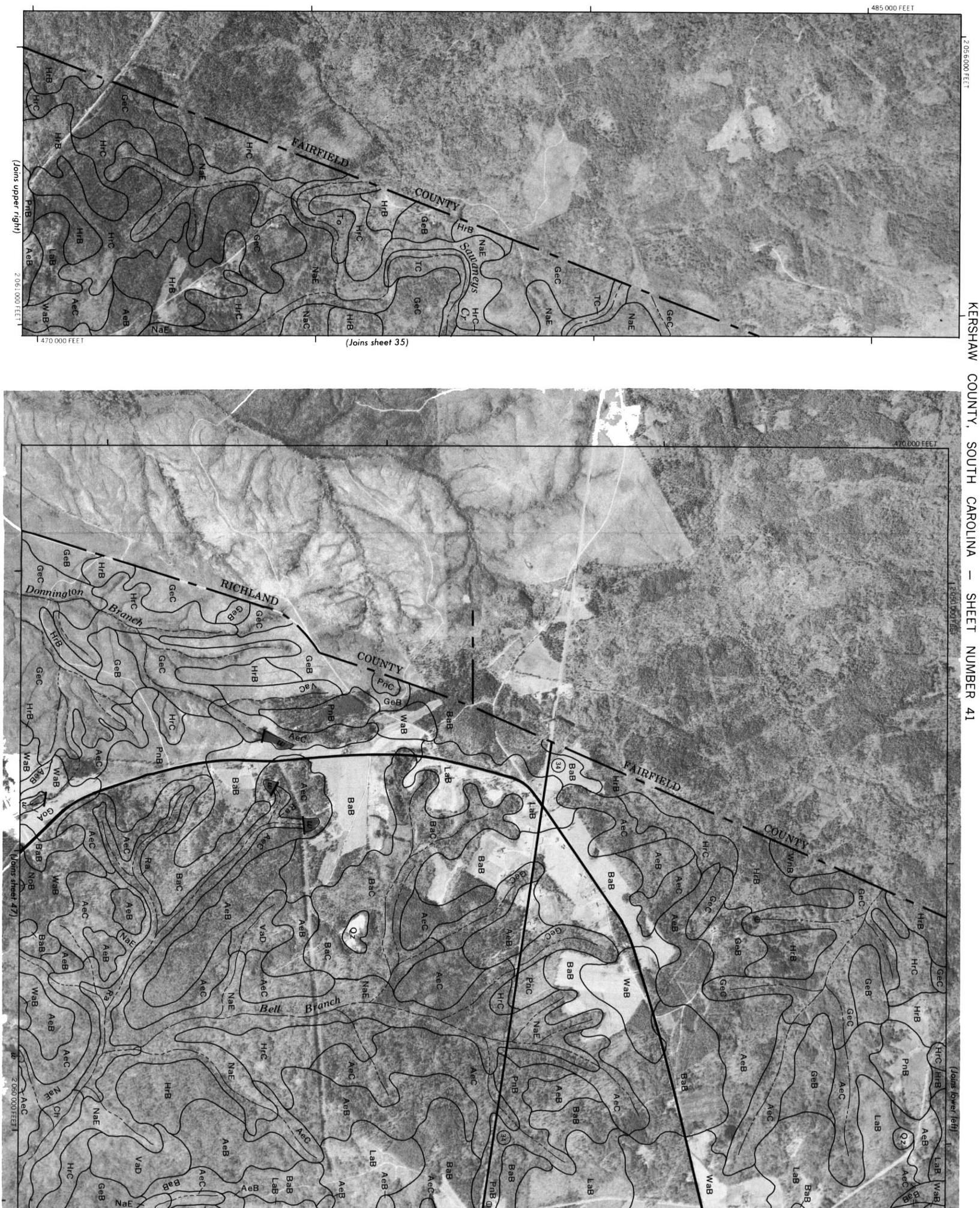
5000-FOOT GRID TICKS

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 40

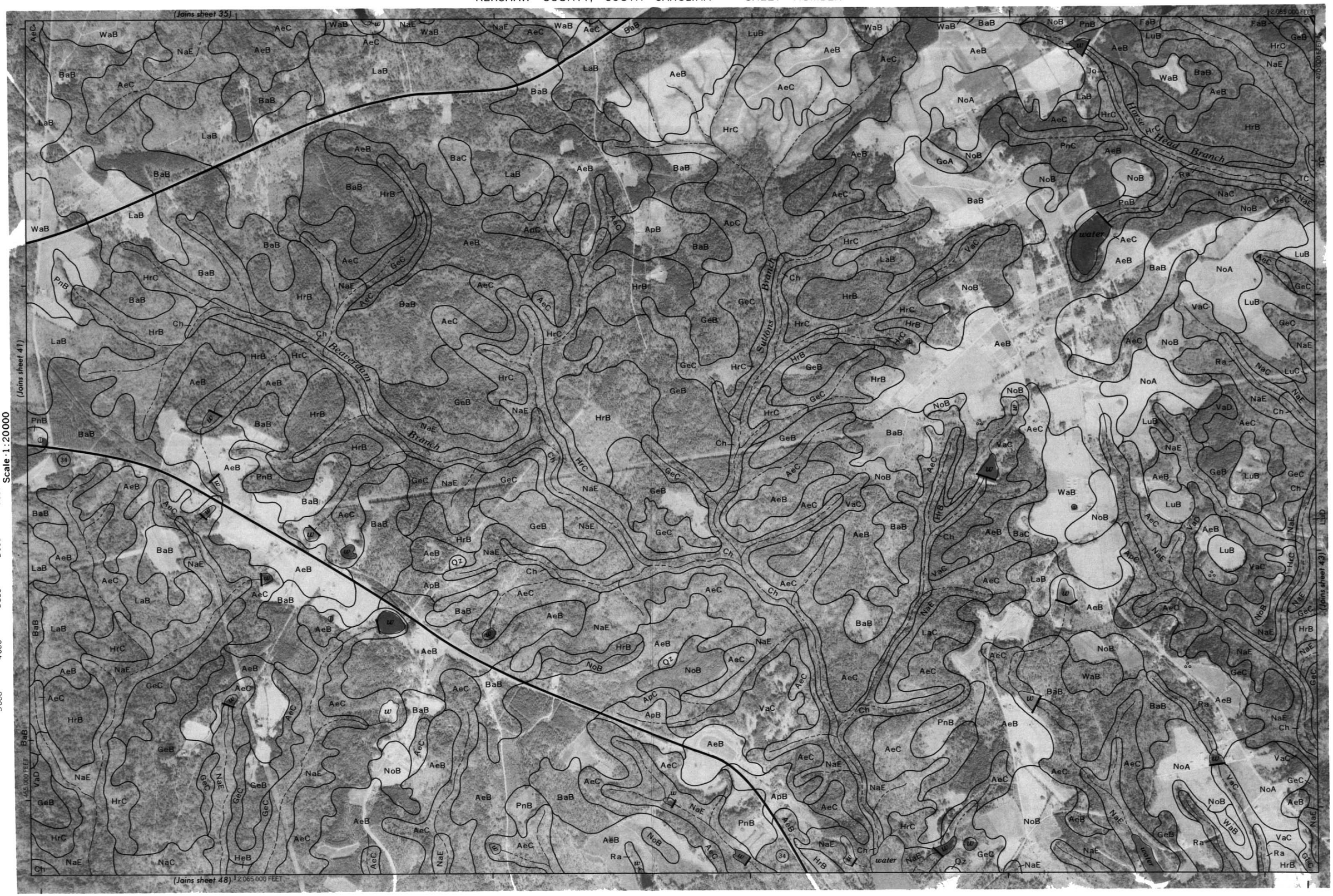
KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 41

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.



KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 41

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 42



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 42

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 43

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

This map is compiled on 1974 aerial photographs by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 44

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 45

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 45

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Soil boundaries and symbols shown are approximately positioned
Coordinate grid ticks and land division corners if shown are approximately positioned

45

N

1 Mile
5000 Feet

Scale 1:20000

(Joins sheet 38)

(Joins sheet 44)

(Joins sheet 46)

(Joins sheet 51)

2 135 000 FEET

470 000 FEET

455 000 FEET

N.R. GOODALE STATE PARK

ADAMS MILLPOND

HERMITAGE MILL POND

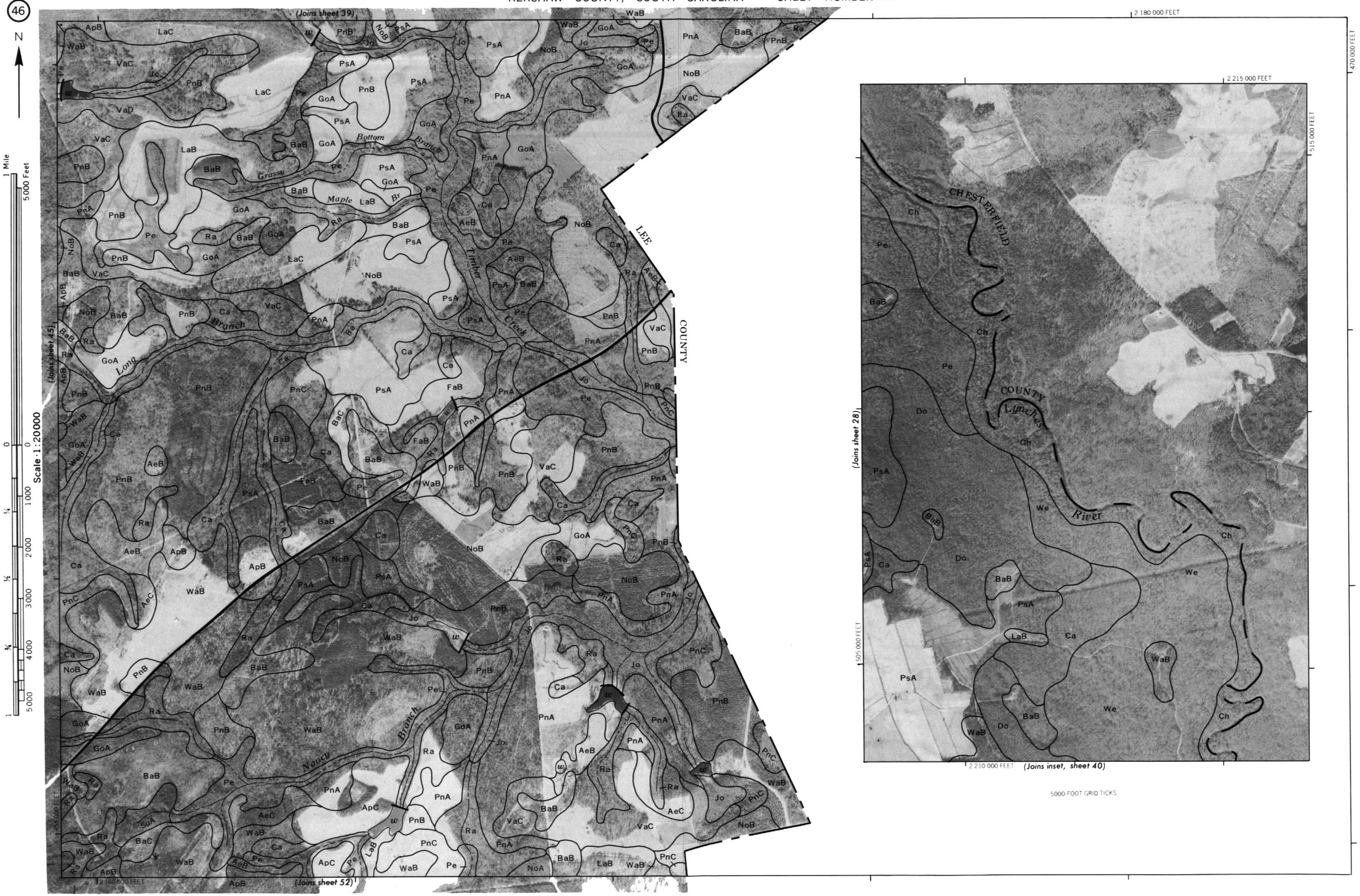
Berkley Branch

Tyre Creek

Big Pine

water

jupiter



This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 46

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 47

47

N

2 040 000 FEET

450 000 FEET

(Joins sheet 41)

(Joins sheet 48)

(Joins sheet 53)

2 060 000 FEET

RICHLAND COUNTY

Bear Branch

Dominion Branch

Big Creek

Flat Branch

Twenty five Mile Creek

Yankee Br

1 Mile

5000 Feet

Scale 1:20000

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 47

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 49

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 5

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 5

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

5

N

1 Mile

5000 Feet

0 0

Scale 1:20000

1 5000 ¼ 1000 ½ 2000 ¾ 3000 1 4000 1¼ 5000

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid lines and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 50

N

Scale 1:20000

1 Mile
5000 Feet

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 51

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

52

N

Scale 1:20000

1 Mile

5000 Feet

5000-FOOT GRID TICKS

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 52

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 53

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 54

54

N

1 Mile
5000 Feet

Scale 1:20000

0 ¼ ½ ¾ 1
0 1000 2000 3000 4000 5000

(Joins sheet 48)

2 085 000 FEET

(Joins sheet 33)

(Joins sheet 55)

(Joins sheet 59)

2 065 000 FEET

425 000 FEET

445 000 FEET

Elgin

White Pond

LITTLE WHITE POND

Horsepen Creek

Wolf Pit Branch

Briar Branch

COAST LINE

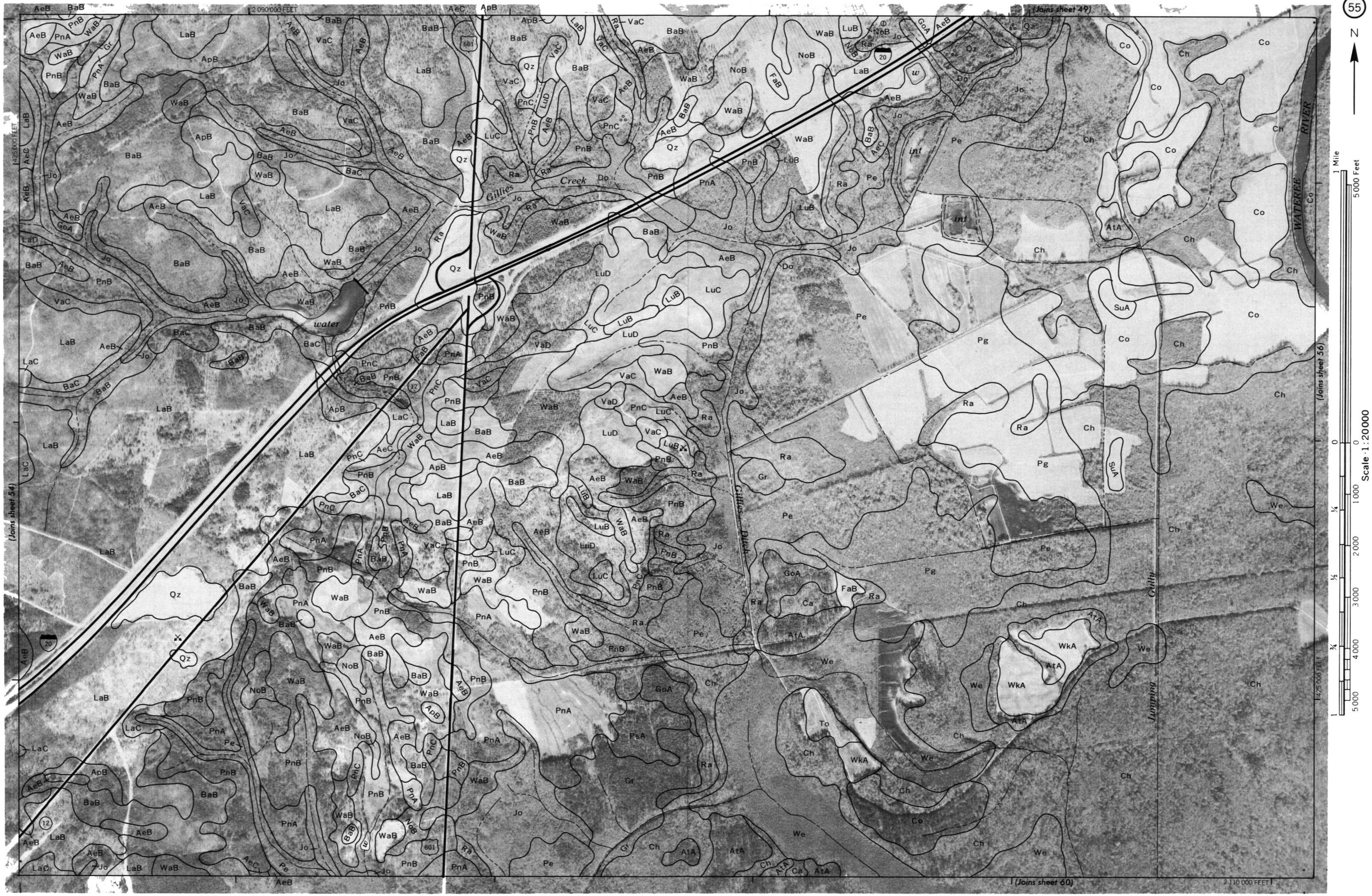
SEABOARD

water

LINE

This map was compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 54



KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 55

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

56

N

Scale 1:20000

1 Mile 5000 Feet

0 ¼ ½ ¾ 1

0 1000 2000 3000 4000 5000

(Joins sheet 50)

(Joins sheet 55)

(Joins sheet 61)

(Joins sheet 67)

2 135 000 FEET

2 125 000 FEET

2 115 000 FEET

435 000 FEET

WATEREE RIVER

Gibsons Neck

Belmont Neck

Town

Cypress Creek

SOUTHERN

water

521

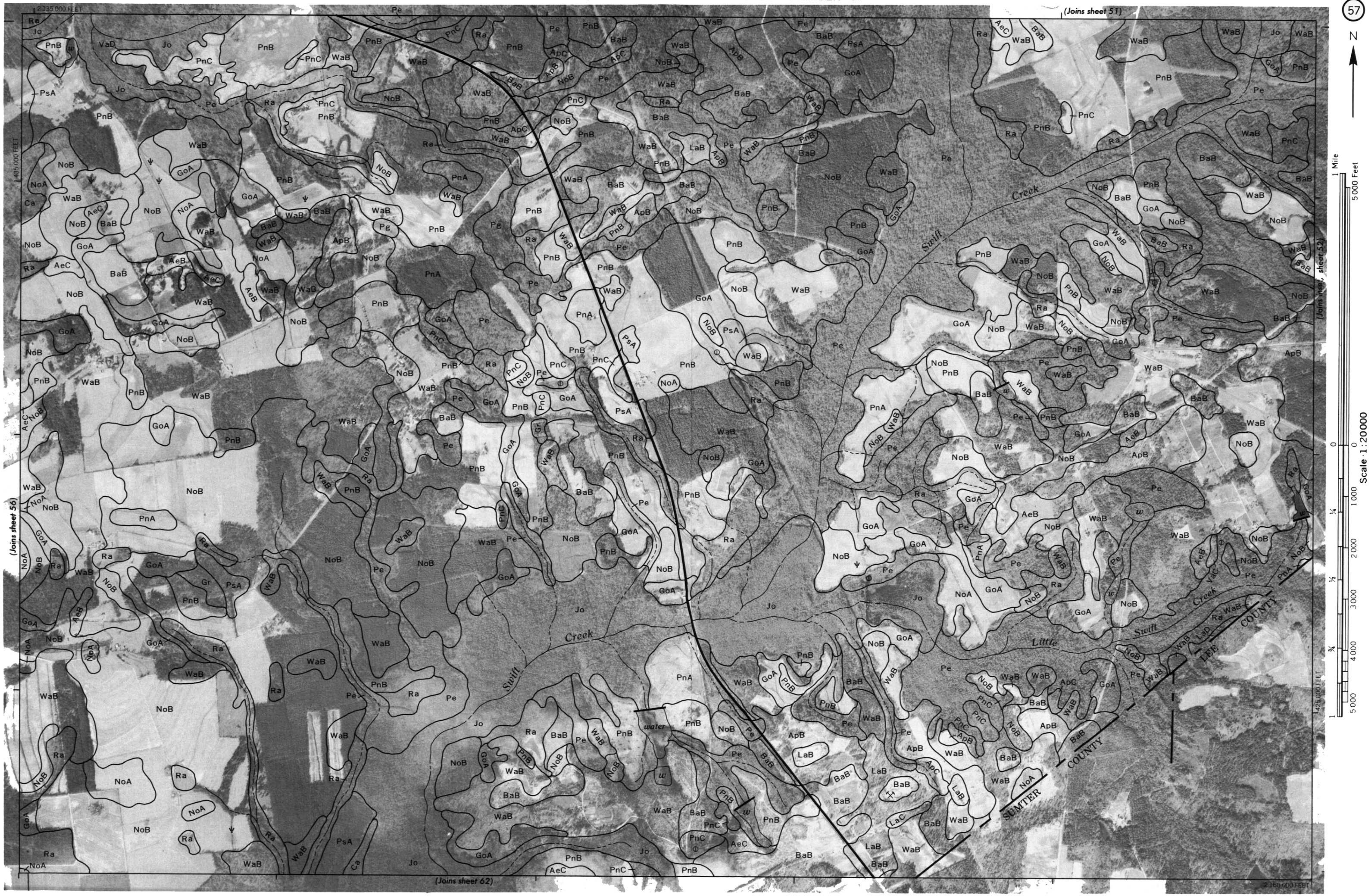
961

Co Ch We AtA WkA WkB GoA Qz Gr Ca PsA Ra Jo PnA PnB NoA NoB FaA FaB Do To SuA Go Pe WaB AeC

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 56

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 57



KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 57

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

58

N

1 Mile
5000 Feet

Scale 1:20000

2 050 000 FEET

2 040 000 FEET

1 965 000 FEET

(Joins sheet 59)

(Joins sheet 59)

RICHLAND COUNTY

Kelly Creek

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 58

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 59

59

N

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 59

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned

2 065 000 FEET

(Joins sheet 54)

(Joins sheet 58)

(Joins sheet 60)

(Joins sheet 63)

HEATH POND

KIRKLAND POND

water

Spears Creek

Kelly Creek

Hall Creek

Sloan Branch

RICHLAND COUNTY

1 Mile

5000 Feet

Scale 1:20000

6

N

Scale 1:20000

1 Mile

5000 Feet

0

0

¼

1 000

½

2 000

¾

3 000

1

4 000

5 000

2 155 000 FEET

2 135 000 FEET

LANCASTER CO

(Joins sheet 1)

(Joins sheet 5)

(Joins sheet 7)

(Joins sheet 12)

Neals Creek

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 6

60

N

Scale 1:20000

1 Mile

5000 Feet

(Joins sheet 55)

(Joins sheet 59)

(Joins sheet 64)

(Joins sheet 61)

2 110 000 FEET

2 090 000 FEET

440 000 FEET

420 000 FEET

BETTY NECK SWAMP

Gum Swam

Spears Creek

McCaskill Creek

Jo Creek

Gillies Ditch

Lawing Gully

WATEREE RIVER

water

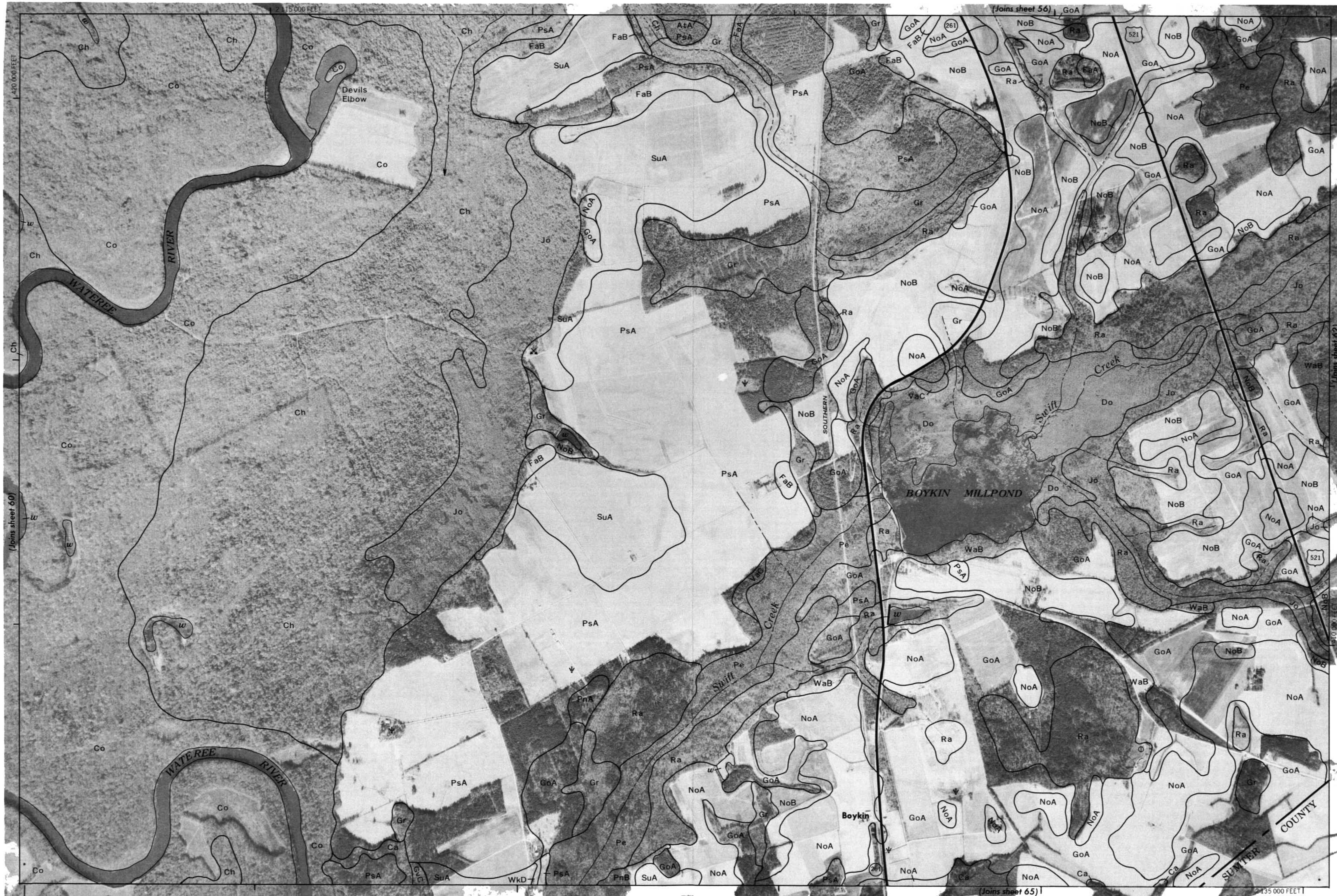
601

LaB LaC BaB AeB AeC WaB PnA PnB PnC NoB NoA Ra Jo Pe Gr AtA Ca PsA We Ch Co Do VaC VaD AeG Qz

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 60

61



N

1 Mile
5000 Feet
0 ¼ ½ ¾ 1
0 1000 2000 3000 4000 5000
Scale 1:20000

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 61

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 62

62

N

1 Mile

5000 Feet

Scale 1:20000

(Joins sheet 57)

(Joins sheet 61)

(Joins sheet 9)

(Joins sheet 15)

2 150 000 FEET

2 060 000 FEET

2 140 000 FEET

2 045 000 FEET

535 000 FEET

545 000 FEET

Swift Creek

Singletons Creek

Rocky Br

McDaw Cr

SUMTER COUNTY

LANCASTER COUNTY

521

522

Ra NoB WaB PsA Ca Jo GoA PnB AeC LaB BaB NoA PnC VaC AeB LaD BaC Qz DuC RoD TC RoF CeC DuB HeB Ch PaD2 PaE2 CeB

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 62

KERSHAW COUNTY, SOUTH CAROLINA — SHEET NUMBER 63

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 63

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

64

N

Scale 1:20000

1 Mile 5000 Feet

0 ¼ ½ ¾ 1

0 1000 2000 3000 4000 5000

2 010 000 FEET

405 000 FEET

2 090 000 FEET

(Joins sheet 60)

(Joins sheet 63)

(Joins sheet 65)

McCaskill Creek

Otterside Branch

Dalew Branch

Spears Creek

Raglin Creek

RICHLAND COUNTY

ENGLISH POND

601

601

601

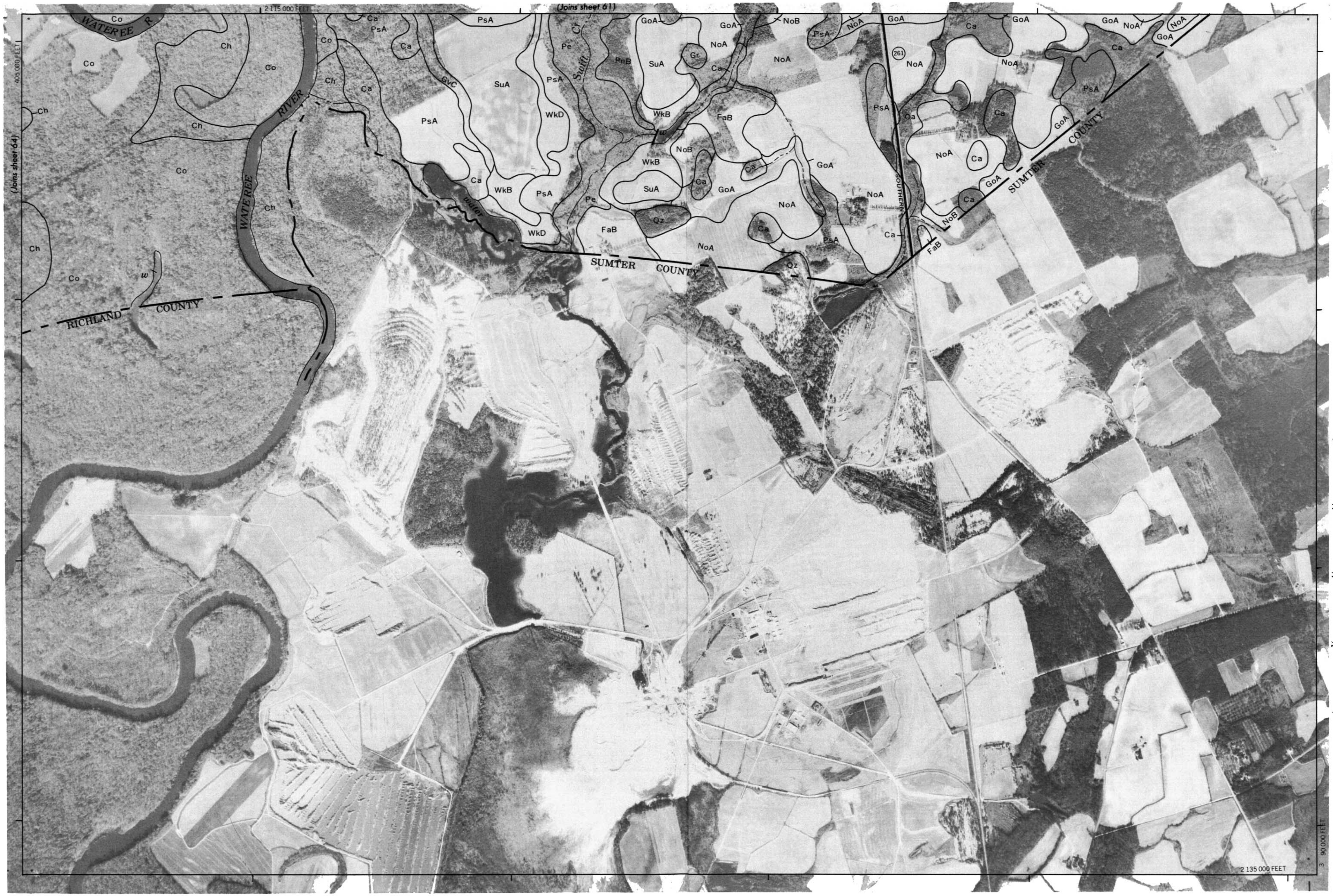
601

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture. Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 64

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 65

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned



N

1 Mile

5000 Feet

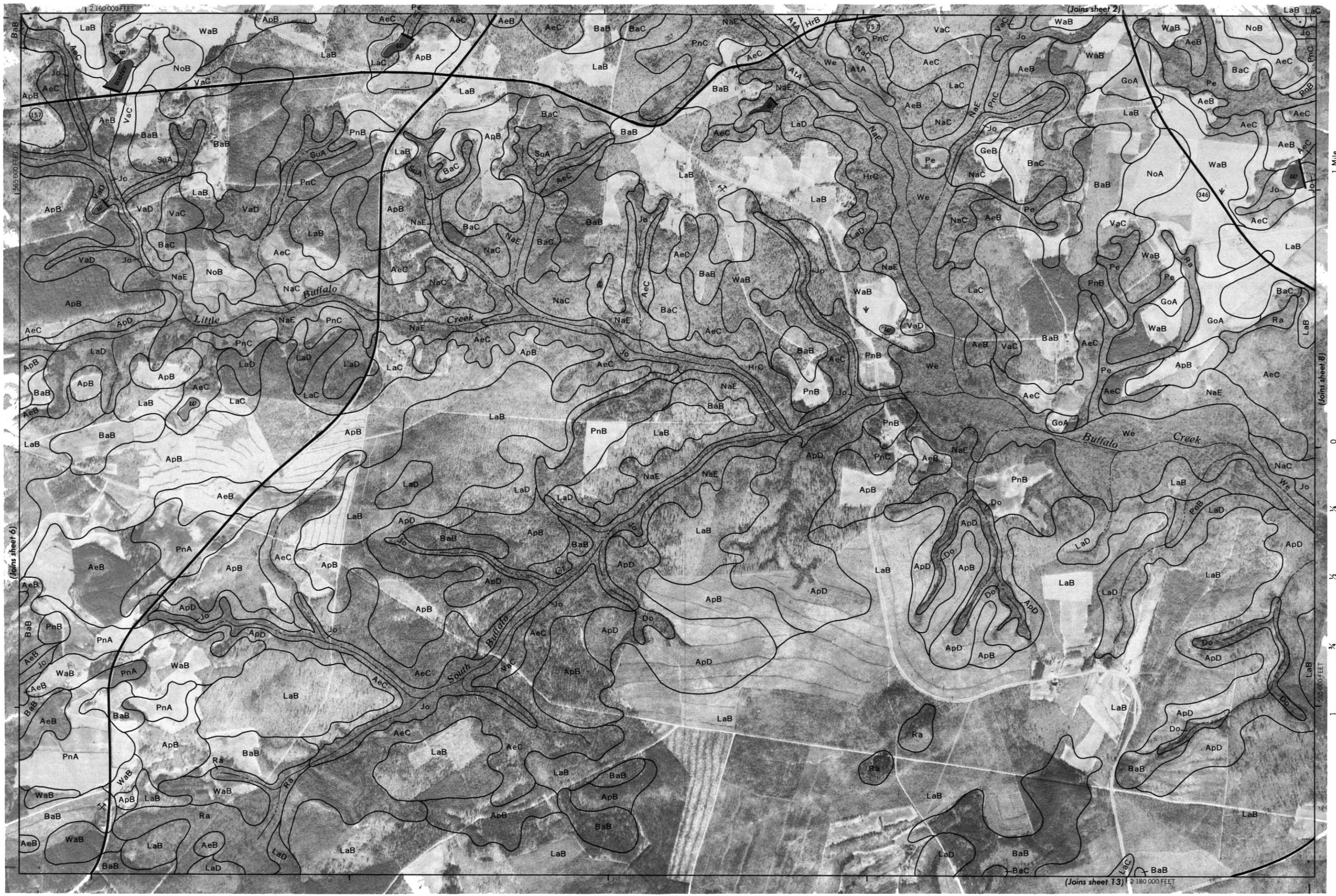
0 ¼ ½ ¾ 1

0 1000 2000 3000 4000 5000

Scale 1:20000

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 7

This map was compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned



7

N

1 Mile

5 000 Feet

Scale 1:20000

0 ¼ ½ ¾ 1

0 1 000 2 000 3 000 4 000 5 000

8

N

1 Mile
5000 Feet
0
Scale 1:20000
0
1000
2000
3000
4000
5000 FEET

2 205 000 FEET
2 189 000 FEET
565 000 FEET
580 000 FEET
570 000 FEET
2 185 000 FEET

(Joins inset)
(Joins sheet 7)
(Joins sheet 14)
(Joins sheet 2)
(Joins upper left)

CHESTERFIELD COUNTY
Lynches River
Buffalo Cr.
RALEY MILLPOND

4000 AND 5000-FOOT GRID TICKS

This map is compiled on 1974 aerial photography by the U. S. Department of Agriculture Soil Conservation Service and cooperating agencies.
Coordinate grid ticks and land division corners, if shown, are approximately positioned.

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 8

KERSHAW COUNTY AREA, SOUTH CAROLINA NO. 9

This map is compiled on 1974 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.